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Report of the joint session of the

INDIAN OCEAN FISHERIES COMMISSION (IOFC)
(Seventh Session)
and the
INDO-PACIFIC FISHERIES COMMISSION (IPFC)
(Twentieth Session)

Rapport de la session conjointe de la

COMMISSION DES PÊCHES POUR L'OCÉAN INDIEN (CPOI)
(septième session)
et de la
COMMISSION INDO-PACIFIQUE DES PÊCHES (CIPP)
(vingtième session)

Bali, Indonesia/Indonésie, 11-18 November/novembre 1982

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE

REPORT OF THE JOINT SESSION
of the Seventh Session of the
INDIAN OCEAN FISHERY COMMISSION (IOFC)
and the Twentieth Session of the
INDO-PACIFIC FISHERY COMMISSION (IPFC)

RAPPORT DE LA SESSION CONJOINTE
de la septième session de la
COMMISSION DES PECHES POUR L'OCEAN INDIEN (CPOI)
et la vingtième session de la
COMMISSION INDO-PACIFIQUE DES PECHES (CIPP)

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Rome 1983

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PREPARATION OF THIS REPORT

This is the final version of the report as approved by the joint meeting of the seventh session of the Indian Ocean Fishery Commission (IOFC) and the twentieth session of the Indo-Pacific Fishery Commission (IPFC), and endorsed respectively by the two Commissions. The country statements, in the original language of submission appear in the Appendices.

PREPARATION DU PRESENT RAPPORT

Le présent texte constitue la version définitive du rapport qui a été adopté par la Commission des pêches pour l'océan Indien (CPOI) (septième session) et par la Commission indo-pacifique des pêches (CIPP) (vingtième session) réunies en session conjointe et qui a été entériné par chacune des deux commissions. Les exposés par pays, dans la langue originelle de présentation, sont reproduits dans les annexes.

Distribution:

Participants in the Session/Participants à la session conjointe
Members of the Commissions/Membres des Commissions
Other interested nations and international organizations/Autres organisations nationales et internationales intéressées
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ABSTRACT

The final formal report of the joint meeting of the seventh session of the Indian Ocean Fishery Commission (IOFC) and the twentieth session of the Indo-Pacific Fishery Commission (IPFC), held in Kuta Beach, Denpasar, Bali, Indonesia, from 11 to 18 November 1982 is presented. Major topics were a review of the activities of the subsidiary bodies of IOFC and of IPFC, a general debate on the situation and prospects of fisheries in the region, opportunities and needs for regional cooperation, a review of some regional technical assistance programmes, future of Indian Ocean Fishery Commission and Indo-Pacific Fishery Commission and the FAO World Conference on Fisheries Management and Development.

A list of major decisions and recommendations of the joint meeting is included as Appendix D.

The portions of the report relating to IOFC and IPFC separately were also endorsed respectively by the Commissions.

RESUME

On trouvera ci-après la version définitive du rapport approuvé par la réunion conjointe de la Commission des pêches pour l'océan Indien (CPOI) (septième session) et de la Commission indo-pacifique des pêches (CIPP) (vingtième session), tenue à Kuta Beach, Denpasar, Bali, Indonésie, du 11 au 18 novembre 1982. Les principales questions débattues ont été les suivantes: activités des organes subsidiaires de la CPOI et de la CIPP; situation et perspectives de la pêche dans la région, posibilités et besoins de coopération régionale; examen de certains programmes d'assistance technique régionaux; avenir de la Commission des pêches pour l'océan Indien et de la Commission indo-pacifique des pêches; Conférence mondiale de la FAO sur l'aménagement et le développement des pêches.

Une liste des principales décisions et recommandations de la réunion conjointe figure dans l'annexe D.

La partie du rapport concernant respectivement la CPOI et la CIPP a aussi été adoptée par chacune des deux commissions.

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OPENING OF THE SESSION

1. The seventh session of the Indian Ocean Fishery Commission (IOFC) and twentieth session of the Indo-Pacific Fishery Commission (IPFC) were held jointly from 11 to 18 November 1982 at the Puri Bunga Convention Hall of the Pertamina Cottages, Kuta Beach, Denpasar, Bali, Indonesia. The session was attended by the representatives of 22 members of the Commissions, by an observer from one Member Nation of FAO, by representatives of the United Nations Development Programme (UNDP) and the United Nations Educational, Scientific and Cultural Organization/Intergovernmental Oceanographic Commission (Unesco/IOC) and by observers from four intergovernmental and non-governmental organizations. A list of the delegates and observers is given in Appendix A to this report.

2. The Commissions were welcomed by the Chairman of IOFC, Admiral Abdu Rachman (Indonesia). In his address some of the latest developments in the Indian Ocean were mentioned. He pointed out the different stages of development between the member countries and recent surveys indicating areas of resource potential whilst limitations exist in some large-scale fisheries. Even with this diversity however there are common problems encountered in promoting national capabilities for resource management and development. Although training has already achieved improvement it needs to be continued and intensified. The Law of the Sea Conference has brought new opportunities and new problems of rights and obligations. Consideration of activities of subsidiary bodies should lead to consideration of regional cooperation with technical and economic cooperation between developing countries sharing efforts on tuna exploitation and development of resources and aquaculture in the sea, fresh and brackish waters. Attention was drawn to this trial opportunity to discuss jointly the structure and work of both IOFC and IPFC and the FAO World Conference on Fisheries Management and Development.

3. In his address the Chairman of IPFC, Tengku Dato Ubaidillah (Malaysia) thanked the Executive Committee and Secretariat for their past two years' work in fostering fisheries development and aquaculture. He described the common problems in this new era of extended jurisdiction of coastal countries' exclusive economic zones and contrasted the problems of poverty among small-scale fisherfolk with problems of utilization of these extended offshore fishery areas - both matters related to management control and surveillance. The hope was expressed that FAO comprehensive assistance to such management through decentralized subregional action plans as endorsed at the nineteenth session of IPFC would be strengthened with appropriate support. In aquaculture, funding and technical support is also needed particularly in the small-scale sector through fish seed production and feed development to help develop the rich potential in this field.

4. In his welcome, the Governor of Bali, Prof. Dr Ida Bagus Mantra, emphasized the importance of fisheries to the island of Bali and the efforts made by the Government in upgrading the technology of the traditional fishermen to enable them to increase their income. He wished the session's success in achieving its aim of promoting fishery development by experiences among the delegations.

5. Dr A. Labon, Officer-in-Charge of the Fisheries Department of FAO, brought the greetings and best wishes of the Director-General of FAO, Dr Edouard Saouma. The significance of this first joint meeting of IOFC and IPFC was emphasized as the opportunity to discuss matters of common interest as well as those pertaining to the separate Commissions' areas. The significance of the serious global economic situation in terms of the areas' requirements for social and economic development and the consequent need for careful decisions on priorities of resource utilization were emphasized.

6. Two matters of special importance were stressed: the important contribution of the small-scale fishermen to food production contrasting with their personal plight and the need for appropriate management of fishery resources. Delegates were asked for their guidance to FAO as the Secretariat for the Commissions to help determine their future work. Delegates were also invited to review FAO's preparations for the planned World Conference on Fisheries Management and Development. Dr Labon ended by warmly thanking the Indonesian Government for the excellent facilities set in such splendid surroundings provided for the joint session.

7. Mr S.S. Puri, Assistant Director-General and Regional Representative for Asia and the Pacific, FAO, Bangkok, addressed the session. He told the meeting that he was new to FAO,

having taken up his duties in Bangkok only some four months ago, and was primarily interested at this stage with familiarizing himself with the fishery problems of the region and what might be done to solve them. He stressed however, that the region's overall fishery development over the past decade had been on the order of a growth rate of 3 percent, considerably above the world average. Eight of the world's 15 top fishing countries were located in the region, he said. Yet this was certainly no means for any misplaced complacency, he stressed. The new Assistant Director-General/Regional Representative for Asia and the Pacific also emphasized the need for far greater attention to aquaculture as a part of an integrated approach to agricultural and fishery development generally. The practice of aquaculture began in this region, in China some 2 400 years ago, he said, yet in all too many nations had not spread sufficiently. Of the approximately 22 million hectares suitable for aquaculture, only two million were in actual use for that purpose, he said. Mr Puri thanked the meeting for its interest in the region's fishery problems and wished it every success in its deliberations.

8. In declaring the session open, Prof. Soedarsono Hadisapoetro, Minister of Agriculture of Indonesia, emphasized the unique opportunity offered by holding a joint session of the two Commissions since many common problems face member countries of both Commissions. The holding of such a joint session provided a better opportunity to delegates to discuss and to examine problems towards getting more efficient and effective solutions for the benefit of all member countries. He referred to the opportunities offered by the new law of the sea and the establishment of the principle of exclusive economic zones which enabled coastal countries to gain additional control over fishery resources and acquire more responsibilities for managing the zones. He emphasized that the introduction of more national fishing fleets or the establishment of any suitable arrangements to replace the foreign fishing fleets is common interest to both the developed and the developing countries. He reminded the audience that due to the migratory nature of the fish stocks regional collaboration for determining a suitable standard management system would be very helpful in order to achieve rational utilization of fishery resources in the region and maintain harmonious relations among the neighbouring countries.

9. The dominance of the small-scale fisheries in Indonesia and the several management measures taken by the Government in order to protect small traditional fishermen from unfair competition by modern fisheries and to conserve the resources, including the banning of trawling were described. He expressed the hope that the joint session would formulate some concrete recommendations designed to uplift the groups of small-scale fisheries so that a more applicable distribution of development and economic growth at the lower social levels could be attained. He concluded that although current estimates of potential fish stocks for both marine and freshwater fish is sufficient to meet the rising demand, the efficient management of the resources is essential. He outlined that the problems of overfishing, pollution of marine environment and other human activities would pose difficulties in achieving the expected demand if production is based solely on fish capture activities. These problems underscored the stronger emphasis needed in the development of aquaculture in freshwater, brackishwater and mariculture.

ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION

10. The Commissions considered the agenda submitted in document IOFC/IPFC/82/1, Rev.1 and adopted it as given in Appendix B. The documents placed before the Commissions are listed in Appendix C.

INDIAN OCEAN FISHERY COMMISSION: ACTIVITIES OF THE SUBSIDIARY BODIES

(a) IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs

11. The Secretariat introduced documents IOFC/IPFC/82/8 and 9 reports of the third and fourth sessions of the IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs which were held in Doha, Qatar, on 28-30 September 1980 and 19-21 April 1982 respectively. The Committee considered four major issues and formulated the following conclusions and recommendations:

Shrimp Fisheries of the Gulfs

12. The necessity of maintaining the closed season for the shrimp fisheries was confirmed. However a certain amount of the basic biological information needed for the management of the fishery was lacking. It was therefore recommended at the third session:

(a) to maintain the closed seasons for shrimp as established this year during 1981, for the period from 1 February until the end of June;

(b) that FAO prepare a research project on shrimp fisheries aimed at obtaining information to determine the location and seasons of shrimp spawning and juvenile habitat, to determine population distribution and the age and size of shrimp at maturity, as well as all other necessary biological studies. In the light of this information it will be possible to determine the specifications of suitable fishing methods and maximum authorized catch (optimum effort), and to propose management measures for shrimp fisheries operations. This project proposal should be submitted to the countries of the region before the end of the year in order to prepare it for submission to the sixth session of the Conference of the Arab Ministers of Agriculture in the Gulf and the Arabian Peninsula;

(c) prior to this, FAO should arrange for a visit of a shrimp fisheries expert to the countries of the region to review and get the opinion of the Governments concerned on the proposed project document. In case the expert is unable to visit some countries of the region, the project document should be sent to them by mail.

13. These recommendations were slightly amended and supplemented at the fourth session as follows:

(a) the importance and necessity of keeping the closed season for shrimp fishing was emphasized. The duration of the closed season should be defined by each member country, depending on the availability of information and on the prevailing environmental and socio-economic conditions;

(b) there should be no increase in the shrimp fishing effort (no new fishing licences should be issued and the size of fishing boats should be limited);

(c) an organized and continuous collection of statistical data should be carried out in member countries to determine any changes in shrimp catches. The data so obtained should be delivered to the Secretariat of the IOFC Gulfs Committee for further analysis and distribution to member countries and the General Secretariat of the Conference of Arab Ministers of the Gulfs and Arabian Peninsula.

14. A Workshop on the Assessment of the Shrimp Stocks of the West Coast of the Gulf, between Iran and the Arabian Peninsula was held in Kuwait, 17-22 October 1981.

Fishery Resources other than Shrimp

15. The Committee concluded at its fourth session that:

- Demersal fish contribute the main base for utilization by the Gulf States. Pelagic fish are not fully exploited at the time of reporting;

- A balanced exploitation of both fisheries is required and a greater proportion of shrimp by-catches should be used for human consumption;

- Countries of the Gulf should undertake more cooperative control of their fisheries;

- Attention should be paid to fish handling and marketing techniques for optional utilization of the catch.

Projects

16. Fishery development project: the project document of the Fishery Resources Development and Management Project has been presented to UNDP.

17. Study of shrimp fisheries: great interest was shown in this project and the Committee recommended that:

(i) The FAO project document should be reformulated so that emphasis be laid on the following objectives:

- to undertake a comprehensive study on shrimp fisheries in the Gulfs, to cover all aspects and data not available in the countries of the region;
- to carry out short-term studies on fisheries and crustacea at the request of some countries where shrimp fisheries do not constitute major importance;
- to exchange scientific and technical data among member countries;
- to study the effects of the various management policies adopted;
- to hold workshops on fishery management;
- to provide a number of consultants specialized in fishery resources and management to satisfy the needs and wishes of some member countries as indicated at previous meetings of the Committee.

(ii) It was pointed out that this project would be considered as a first step in a series of projects which could be extended in the future to meet the changing needs in the region. FAO should explore the possibility of enlisting cooperation of some capable national institutions available in the region such as the Kuwaiti Institute of Scientific Research, the Oceanography Department of the University of Qatar and the Oceanography Department of the University of King Faisal in Saudi Arabia, through sub-contracts, to implement some activities of the project, provided that these institutions would inform FAO, within one month from the date of receipt of FAO correspondence in this respect, of their possible contribution in implementing some of the activities included in the project proposed by FAO.

18. The representative of Iran expressed the wish that the Fisheries Institute of Iran could also be contacted with a view to cooperating in the implementation of some activities of the project as the programme coincides with national research projects.

Fish Marketing Information and Technical Advisory Service

19. While it was felt that the service provided by INFOPESCA and INFOFISH was extremely valuable in their respective regions, the present fish surplus in the Gulfs is very limited. The Committee therefore felt that the establishment of a similar service in this region was not timely.

20. The reports (docs. IOFC/IPFC/82/8 and 9) and their recommendations were endorsed by the Commission and those aspects dealing with fish handling and marketing were especially emphasized in view of the rapid gains in available food that could be achieved in this way.

(b) IOFC Committee for the Development and Management of Fisheries in the Southwest Indian Ocean

21. The first session of the Committee was held at Le Chaland, Mauritius, on 22-24 April 1981 and discussed three major issues.

Fisheries Development

(i) Coastal fisheries: several aspects of coastal fisheries were discussed including the need for improving fisheries information, the upgrading of traditional fisheries and the transfer of fishing technology in the region; the improvement of fishing boat design, the promotion of aquaculture, identification of priorities for the development of small-scale fisheries, the need for training and a greater use of the by-catch. The need for

test fishing to aid in fisheries planning was also emphasized and the Committee recommended that test fishing activities be planned and conducted in the area on a regional basis.

(ii) Tuna fisheries: the Committee requested that it be kept fully informed of the activities of the FAO/UNDP Project for Tuna Management in the Indian and Pacific Oceans. It further felt that there was a need to train local fishermen to enable them to enter the fishery and assistance was also needed for the development of catching techniques for surface tunas.

Support for Fisheries Administration and Management

22. The Committee identified the need to foster regional cooperation in planning and conducting surveys of specific resources of improving statistics, monitoring, control and surveillance of existing fisheries and the developement of a strong fisheries data base.

23. To facilitate the work of the Committee the preparatory phase of the Regional Project for the Development and Management of Fisheries in the Southwest Indian Ocean became operational in October 1981. An early activity of the project was the organization of a Regional Seminar on Fisheries Monitoring, Control and Surveillance held in Seychelles in September 1982 in fulfilment of a recommendation of the Committee. A workshop on traditional fisheries is scheduled for December 1982.

24. The Commission endorsed the report and its recommendations.

25. One delegation, in supporting the conclusions and recommendations of the Committee, wished to emphasize the particular nature of the management of migratory stocks and particularly tunas for which special provisions had been made in the Law of the Sea. These require wherever possible the creation of specific intergovernmental organizations for the management of such stocks. In particular, attention was drawn to the existence of organizations such as the International Commission for the Conservation of Atlantic Tunas (ICCAT) or the Inter-American Tropical Tuna Commission (I-ATTC) as well as the constant effort made by the delegates to facilitate the creation of such organizations.

(c) IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal

26. The reports of the first session of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal, held in Colombo, Sri Lanka, from 7 to 9 December 1981 (IOFC/IPFC/82/11) and of a special session of this Committee held in Bali, Indonesia, from 11 to 12 November 1982 (IOFC:DM/BB/82/REP) were introduced by the Committee's Chairman, Mr Anura Weeraratne, Sri Lanka.

27. Mr Weeraratne reiterated his appreciation of the setting up of sub-regional committees serving natural management areas and of the FAO support through provision of technical services to promote an effective transfer of technology, increase the self-reliance of developing coastal States and foster cooperation among them.

28. When reviewing the report of the first session, he drew the attention of IOFC to the recommendation that the Committee should also deal with fisheries in brackish and inland waters. The Committee was aware that inland fisheries were not presently included in the terms of reference of IOFC itself. It therefore decided to forward this recommendation to IOFC for possible action by the Committee on Fisheries and the Council of FAO. While taking note of this point, the Commission decided to discuss it under item 9 of the agenda of the joint session which will cover all institutional aspects.

29. The Chairman also stressed the need for the Secretariat of the Committee to be located in the region. To make the work more effective and expeditious FAO should give serious thought to this problem. The Officer-in-Charge of the FAO Fisheries Department stated that FAO will fulfill its responsibilities for servicing its regional and sub-regional bodies and provide an adequate Secretariat.

30. Reference was also made to the special session of the Committee held in Bali, Indonesia, on 11 and 12 November 1982 to discuss the location of the Bay of Bengal Fisheries Project. IOFC noted with appreciation that India and Sri Lanka had come to a friendly agreement concerning the headquarters and activities of Project GCP/RAS/040/SWE "Development of Small-Scale Fisheries in the Bay of Bengal". The Committee agreed on the following proposal jointly submitted by the two countries:

- The headquarters of Project GCP/RAS/040/SWE should remain in Madras until the termination of the Project.

- Fishing craft development will be located in Sri Lanka making use of the existing infrastructure facilities while work essential for India will continue in India.

- The new international staff (i.e., fishery technologist and aquaculturist) will be located in Colombo.

31. On this occasion the delegations of India and Sri Lanka wished to extend their sincere thanks to the FAO Secretariat and in particular to Dr A. Labon for their very valuable assistance in reaching this amicable solution. The representative of UNDP stated that the solution of this problem will accelerate the implementation of Project RAS/81/051 "Promotion of Fishery Development and Management in the Bay of Bengal". He urged the participating countries to make early and full use of their sub-regional institutional structure through direct national participation in the Project in order to allow sub-regional fishery cooperation to continue once UNDP financial assistance is terminated. Both Mr Weeraratne and the Officer-in-Charge of the Fisheries Department reported on their contacts with Burma concerning the participation of this country in the Committee's work[1/]. A final decision is still under consideration by the competent Burmese authorities. Regarding the participation of Indonesia, Admiral Rachman informed IOFC that his country has decided to join the Committee.

32. Attention of the Commission was drawn to paragraph 49 of the report of the first session of the Committee which suggested strengthening cooperation with other fishery development programmes directly executed by bilateral donors. In this connection, the Commission requested the Secretariat to provide more information on such programmes executed in the Indian Ocean and in the Indo-Pacific area in order to avoid duplications of efforts. It was recognized that FAO is in a unique position to coordinate the various inputs of multilateral and bilateral aid programmes. FAO would be prepared to act as coordinator of assistance and provide the Committee with information on bilateral aid provided both donor and recipient governments wished the Organization to perform such a role and make available the essential information. The Secretariat agreed to initiate the appropriate enquiries.

33. It was suggested that management measures implemented in other parts of the world would be of interest for the Commissions' members. The Secretariat was requested to prepare a comprehensive information document on this question for a future session.

34. IOFC approved the report of the first session of the Committee as complemented by the report of the special session.

INDO-PACIFIC FISHERY COMMISSION: ACTIVITIES OF THE SUBSIDIARY BODIES

35. In introducing this item the Secretariat noted that with the exception of the Special Committee on Management of Indo-Pacific Tuna, all the subsidiary bodies of IPFC report to the Commission through its Executive Committee. Thus the Commission, in examining the reports of the fifty-ninth and sixtieth sessions of the Executive Committee which had been presented as working papers, was also, by implication examining the reports of the other subsidiary bodies, which had been made available to the Commission. It was agreed that their examination would deal only with those matters not covered by other items of the agenda.

1/ See para. 9 of the report of the first session of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal, Colombo, Sri Lanka, 7-9 December 1981

36. It was noted that the Working Parties on Aquaculture and on Inland Fisheries had not met since 1980 and 1978, respectively. It had been felt desirable that these working parties should meet consecutively. To arrange this, the next meeting of the Working Party on Inland Fisheries has been postponed and both will now meet in early 1984. A Workshop on Inland Fisheries for Planners was successfully held in August 1982 and the Commission was advised that, in future, special emphasis will be given to the participation of landlocked States.

37. The Working Party on Fish Technology and Marketing had met very recently (2-5 November 1982, Serdang, Malaysia) and the draft report was available. It was noted that the Workshop was well attended by 65 participants and was an example of regional cooperation which increased the effectiveness of local efforts and avoided duplication of research efforts. Gratitude was expressed to the Government of Australia for its financial assistance to this Workshop.

38. The Commission also noted the request made by member countries that the reports resulting from FAO's Comprehensive Programme of Assistance in the Development and Management of Fisheries in Exclusive Economic Zones be made available. It was reported that these reports require technical clearance from the individual countries concerned, as well as clearance for distribution. This matter is being pursued and when clearances are obtained the reports will be made available on request.

39. The second session of the IPFC Committee for the Development and Management of Fisheries in the South China Sea had met in Bali, 8-9 November 1982, immediately preceding the Commission's meeting. Since the items were well discussed by the nations concerned, the Commission did not discuss the Committee's report in detail. The main issue had been that arising from the termination of UNDP funding for the South China Sea Programme in 1984 and the retirement of the Programme Leader who had acted as Secretary of the Committee, at the end of 1982. It was noted that FAO would provide a Secretariat for the Committee.

40. The Standing Committee on Resources Research and Development (SCORRAD) met in Australia on 28 April-4 May 1982. The report is available and the Commission was pleased to see this report published quickly as a substantial independent document. The main recommendation noted by the Executive Committee was the need to improve communication between scientists and administrators (paragraph 12 of the SCORRAD report). The Commission agreed that this was an important problem and suggested that a seminar or workshop might be valuable.

41. The past Chairman of SCORRAD noted that the activities of SCORRAD were essential for good research and that it was reassuring to see that recommendations were being followed up. The importance of the forum was stressed, as it provided an opportunity for regional junior scientists to have their work reviewed by their peers.

42. The new Chairman of SCORRAD informed the Commission that some concern had been expressed that SCORRAD was only attended by biologists, and that other disciplines should be included, in particualr technologists and economists. Since the terms of reference can accommodate this, the Commission encouraged Member Nations with experts in these fields to include them in their delegations to future SCORRAD meetings.

43. The delegate from Indonesia referred to the reference in SCORRAD concerning Indonesia's ban on trawling and outlined to the Commission the reasons for the ban and results to-date.

44. One delegation requested that FAO in its programme of assistance include technical assistance in the training of tuna fishing techniques.

45. In closing the agenda item, the Chairman, on behald of the Commission expressed gratitude to the past Chairman of SCORRAD and to the Chairmen of the Commission's working parties and subsidiary bodies.

46. The Commission noted that symposia had always been a valuable feature of the Commission's sessions. It agreed that the absence of a symposium from the current session

should not be taken as a precedent. The holding of a symposium at the twenty-first session would, however, be difficult because of the holding of the FAO World Conference on Fisheries Management and Development but a symposium should be held at the twenty-second session. A possible topic was the fish resources of the region (including inland waters) and their state of exploitation, but due consideration of the needs of subsidiary bodies should be taken before determining the topic for the next symposium.

REVIEW OF REGIONAL ACTIVITIES

(a) Investigation on Indian Ocean and Western Pacific Small Tuna Resources (GCP/RAS/099/JPN)

Tuna Resources Development and Management in the Indo-Pacific (INT/81/034)

47. The Secretariat reported on the various regional and interregional projects concerned with tuna funded by UNDP and bilateral agencies. The UNDP projects are concerned with the establishment and operation of an information centre covering catch statistics and similar data on tuna in the Indian Ocean and Western Pacific, with the purpose of providing a sound data-base for tuna fisheries development. The first Project (INT/79/026) and, initially, the current Project (INT/81/034) had been initially accommodated in the facilities of the South China Sea Programme. The project has now moved to permanent facilities in Colombo, Sri Lanka. The present staff consists of a project manager and a statistician (funded by UNDP), and a biologist (funded by Japan), though there is provision for consultant and other support in fields such as the design of suitable computer system.

48. Under the EEZ umbrella programme (GCP/INT/398/NOR), Norway provided funds for collection of biological and statistical data on Indonesia and the Philippines. This project has ended but the work is being continued by national institutions, with some assistance in analysis by the staff of the UNDP project.

49. Japan provided funds, under Project (GCP/RAS/099/JPN) for a continuing project directed to supporting biological investigations of the tuna resources of the Indian Ocean and Western Pacific, particularly of small tuna. Both bilateral projects are complementary to the UNDP project.

50. In reply to a question regarding long-term funding the representative of UNDP pointed out that the tuna project was the last of the major fisheries projects funded under the UNDP interregional programme. Support would be forthcoming until the end of the current cycle, in 1985, but it was the normal practice of UNDP to avoid long-term commitments (i.e., of a period of more than five years). It was noted that the pledges to UNDP were falling substantially below the planning figures. However, at least within the regional programmes, the share of agriculture (which included fisheries) was expected to increase. It was stressed that how much of this went to fishery projects (including the tuna project) would depend on the attitude of national delegations at the relevant regional UNDP meetings.

51. In reply to a question, it was pointed out that careful attention was being given to the form in which information was provided to countries. Advice was being sought from other regional bodies: International Commission for the Conservation of Atlantic Tunas (ICCAT), Inter-American Tropical Tuna Commission (I-ATTC), South Pacific Commission (SPC), which already were compiling and processing tuna data. Countries were being asked to appoint national correspondents to the project, who would be approached to advise on the most suitable form of output.

52. The potential value of the information provided by the project to the development of national tuna fisheries (e.g., in producing feasibility studies) was stressed. Tuna fishing was generally an expensive undertaking and countries needed the best possible information on catch rates, tuna and location of the best fishing grounds. At a time when the main share of the catches of larger tuna, especially in the Indian Ocean, were taken by foreign vessels, and when the catches of lesser tuna, and the smaller sizes of large tuna, could be significantly increased, conservation was a less urgent problem.

Apart from the information provided by the tuna project, countries planning to increase their catches could benefit from advice on the appropriate technology for catching tuna (including the use of fish attracting devices) and processing and marketing the catch.

53. It was noted that countries have continued to benefit from the exchange of information on tuna tagging by the convenor of IPFC *ad hoc* Working Party on tuna and billfish tagging, Dr Baylift of I-ATTC.

(b) Network of Aquaculture Centres in Asia

54. The Project Coordinator introduced the programme and explained its aims and accomplishments. Many delegations congratulated the Project Coordinator for the work of the centre, although some felt that the training facilities should be upgraded to handle greater numbers of students from individual countries. It was suggested that the work of the Network could also be usefully expanded to incorporate further topics including reservoir fisheries, improvement of fish seed production, aquaculture in irrigated ponds and fish diseases and parasites. Indonesia offered to provide locations for lead centres directed towards the latter two of these topics.

55. The importance of this project and aquaculture projects in general was underlined in view of the growing importance of aquaculture worldwide. However, a note of caution was sounded in that the area available for aquaculture is limited and that aquaculture could not be expected to replace but only supplement protein production from capture fisheries. Furthermore in many areas lack of technical capability was no longer slowing development; social and economic factors were now becoming more important.

56. The usefulness of aquaculture projects, particularly national projects, could be greatly expanded if interested persons from countries other than the host country could visit them. In this context the observer from Unesco informed the meeting that limited funds exist for the exchange of scientists under the programme of the Division of Marine Sciences and that study tours have been arranged to include aquaculture centres.

(c) Marketing Information and Advisory Services for Fish Products in the Asian/Pacific Region (INFOFISH) (GCP/RAS/096/NOR)

57. The objectives and activities of the project were introduced to the session in an audio-visual presentation which described the three services provided by the project: trade promotion, technical advice and marketing information. The project manager further informed the Commissions that a technical consultation of INFOFISH National Liaison Offices, held in May 1982, recommended to establish the services on a permanent basis and requested FAO to consult with participating governments as to the formation of an intergovernmental institution funded by revenues from sales of project services, government contributions and limited donor support. In consultation with the project's Advisory and Coordinating Committee a draft cost sharing project is presently finalized by FAO Headquarters to cover the transitory period 1984 to 1986, during, which time revenues from sales of project services could be gradually built up and proposed government assessments to be reduced correspondingly. Limited UNDP/donor support is proposed to be primarily directed to TCDC/ECDC activities. Furthermore, it is hoped that during this period consultations with governments towards establishment of an intergovernmental institution will be concluded.

58. Delegations commented positively on the work undertaken by the project and the benefits derived by member countries during its relatively short time of existence. Industry and trade very much appreciated the services rendered by the project, particularly in providing contacts with new markets. In one country a survey of the project's impact in industry and trade was being conducted and first returns had shown very positive response, although there was some hesitation to pay for the services. The project's regular publications, the bi-monthly INFOFISH Marketing Digest and the forthnightly INFOFISH Trade News, are very well received. Caution and strict editorial control were recommended as to the authorship and content of articles reporting on the fish marketing situation in member countries. It was suggested that the project intensifies its collaboration with other organizations working in related fields and that it be considered to open membership to other countries. Links with fish producers and exporters in member

countries should be further straightened. Further suggestions for project activities included: participation in trade fairs, training courses in fish handling, processing, and diversified fish product marketing; harmonization of fish product standards and inspection methods; regular information in shipping schedules and impact of project activities on exports from the small-scale fisheries sector.

59. It was recommended that FAO seek continued financial support for the services after termination of present donor support. Apart from contributions by member countries, particularly their industries, the possibility should be investigated of continuing the services as part of FAO's regular activities. The Secretariat confirmed that all possibilities of maintaining the project services would be carefully studied. It was pointed out that "second generation" problems relating to post-harvest aspects were also encountered in agriculture, forestry and livestock development and that INFOFISH could prove as an example to provide tangible assistance in this field.

(d) Regional Fisheries Development Programme (South Pacific) (RAS/73/025)

60. The Regional Fisheries Coordinator for the South Pacific reviewed the fisheries situation and development activities in the South Pacific region. The entire region encompasses an area of approximately 30 million square kilometers with an aggregate population of five milion. Politically, the region is divided into what might be termed four main enclaves - the French territories of New Caledonia, French Polynesia, Wallis and Futuna, the South Pacific Forum countries (which include Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa), and the three entities emerging from the US Trust Territory of the Pacific Islands (Micronesia) - Federated States of Micronesia, Marshall Islands and Palau, and Commonwealth of Northern Mariana Islands, Guam and American Samoa. Although the smaller island countries have limited land masses with commensurately low population (from about 650 in Tokelau to two million in Papua New Guinea), all have EEZs ranging from extensive to huge and of course they look to the marine resources, principally tuna, within their respective zones as being the mainstay for future economic self-sufficiency, particularly those countries having no agricultural or industrial economic base. Many of the countries have negotiated access and licensing agreements with distant water fishing nations (DWFN) for tuna and skipjack fishing. There is a growing desire among these countries to become more actively involved in both the production and management of their marine resources.

61. With respect to management of marine resources, the South Pacific Forum formed a Forum Fisheries Committee (FFC, and nearly identical in concept to the IOFC/IPFC Committees), which supervises the work of a technical secretariat, the Forum Fisheries Agency (FFA), an organization of professionals in various fisheries disciplines. Operation of the Agency is supported by Australia, the Commonwealth Fund for Technical Cooperation (CFTC), New Zealand, UNDP/FAO, and contribution from the member States. Under the aegis of FFA, two workshops were held during 1982 - one sponsored by the FAO-EEZ Programme on the Harmonisation and Coordination of Fisheries Regimes and Access Agreements, the second sponsored by the United Nations Centre on Transnational Corporation (UNCTC) and FAO on fisheries access rights negotiations.

62. UNDP/FAO Project RAS/73/025 is aimed at providing assistance in fisheries development to the smaller South Pacific Forum countries as well as the entities emerging from the US Trust Territory of the Pacific Islands. Such assistance encompasses the entire spectrum of fisheries from technical advice on fishing technology and fish capture, through fish handling and marketing, fisheries legislation, vessels design, resource surveys, training through workshops and fellowships, etc. The majority of such activities have regional application although some necessarily are country-specific at the outset. For the past two years the project has focussed increasingly upon providing short-term consultancies for problem areas identified by either the governments or project, and consultant expertise is drawn from within the region to the greatest extent possible.

63. As described in document IOFC/IPFC/82/5 the main thrust of UNDP/FAO national projects is toward development of small-scale fisheries. The governments look to this assistance as a means of slowing the urban drift of people from outer islands through increased opportunities for employment and income, and also for self-sufficiency in fish protein with a consequent reduction in fish imports.

64. One of the most important developments in fishing technology in recent years has been the introduction of fish aggregating devices (FADs based on Philippine 'payaos'). Examples were cited of markedly increased catches on billfish under FADs deployed in the Cook Islands, and the generation of a fish surplus in Western Samoa for the first time as the result of small fishing catamarans trolling around FADs; A large number of these devices have been deployed around Fiji for use by the commercial pole-and-line fleet and two purse seiners.

65. At the request of the Chairman, the observer for the South Pacific Commission (SPC) outlined the work of that Organization on the tuna resources of the central and western Pacific Ocean. In introducing the topic he highlighted the tremendous importance of tuna fisheries to the potential for economic self-reliance of the developing countries in the SPC region; the value of tuna catches by distant water fishing nations in the 200-mile zones of numerous countries exceeds the gross national product of those countries.

66. Results from the SPC's Skipjack Survey and Assessment Programme, concluded in 1981, have been used to estimate the standing stock of skipjack in the SPC region at about three million metric tons. This resource is turning over at a very high rate, largely due to high natural mortality, such that the annual throughput of skipjack is approximately six million tons. The necessity to distribute fishing effort widely across the region if harvest is to be maximized, was stressed. Publications on these resource estimates and on assessments of each country for which the SPC works are now in the final stages of preparation.

67. The ongoing Tuna and Billfish Assessment Programme is structured to evaluate the resources of tunas other than skipjack and to provide advice on the potentials for harvesting these resources to the countries for which the SPC works. A comprehensive regional fisheries statistical programme is a central component of the overall research strategy.

GENERAL DEBATE ON THE SITUATION AND PROSPECTS OF FISHERIES INCLUDING COUNTRY STATEMENTS

68. In introducing this agenda item the Secretariat identified five groups of major issues:

(a) Fish production - growth and development of available resources.

(b) Better utilization - reducing by-catch and post-harvest losses.

(c) Management - especially limitation of over-capacity.

(d) Aquaculture - its technical economic and social issues.

(e) Environment - interactions between fisheries and others including: farming (use of pesticides), mineral mining and vegetation (e.g., mangrove) clearing.

69. It was pointed out that there are clear indications that management is crucial, especially in the poorer resource areas of the Indian Ocean. There is a need to limit fishing capacity before economic and social limitations force wastage of investment and effort. Logically, management is a government responsibility and may include, in sequence: control of growth, redeployment of manpower and direct control measures.

70. Delegates presented the major points of their country statements. The full text of these statements, in the original language of submission, is reproduced in Appendices D to V. Below are the salient points emerging from the country statements.

71. It emerged that, although a few countries still looked forward to resources beyond their own utilization capacity, most delegates were well aware of the need for rational development through careful management. Most countries' priority need was for increased, or at least maintained production, for their own population's food needs and for export. In nearly every country, management measures coupled this need with the need for conservation of resources. Most delegates spoke of the priority need of improving employment and welfare of fishermen, particularly in the small-scale fisheries sector. Inevitably however, action to conserve inshore stocks commonly exploited by the artisanal fishery, leads to encouragement of larger scale enterprise to exploit resources further afield.

72. From the delegates' statements, many production development measures emerged.

73. Credit schemes were adopted by many countries, particularly to assist small-scale fisheries, often through cooperatives, although several delegates spoke of problems of selecting the most appropriate recipients and maintaining repayments schedules. Subsidies were given by some fisheries bodies, often to encourage economic or social benefit, such as the purchase of local vessels, to support the small-scale sector or to develop aquaculture to reduce capture fishing effort.

74. Training schemes are almost universal, in many fields and at all levels from vocational to post-graduate. Emphasis was placed on practical training and many delegates from developing countries mentioned the need for increased assistance. Many countries have extension services which vary in emphasis and operation. One country has extension groups within the fishing community, guided by their government.

75. State enterprises, particularly to encourage deep-sea fishing and investment are fostered in many developing countries, although one country has always encouraged the participation of the private sector, representatives of which attended this session. Joint ventures are sought by both distant water fleets and those anxious to exploit their newly created exclusive economic zones in rational and equitable development programmes. Some of these are encouraged through vessel charter, with governments' assistance to the private and cooperative sectors, often through international companies' collaboration. International cooperation was frequently referred to, including one country's suggestion for a pool of experts drawn from resource-sharing countries.

76. In seeking new fishing areas, some countries have undertaken aerial and acoustic surveys and exploratory fishing. One case of abyssal trawling has made a most encouraging start, although little can be known of its extent.

77. Some found that the provision of shore facilities, not only harbour and landing centres but service points and handling facilities encourage fishing investments. Processing facilities, including cold storage, ice manufacture, fish meal and canneries also encourage heavier exploitation although reducing wastage of landed catch.

78. Management measures, often closely associated with encouragement of increased production included area zonation, usually in terms of distance from the shore, rather than depth differentials which are sometimes more significant and easier to control. In one case legislation has been made to free the migration routes of anadromous fish; some delegates spoke of fostering fisheries further afield with financial and other material incentives and giving information gained from surveys. One delegate told of his country's restrictions to multiple and non-operator ownership of fishing vessels, to reduce their tendency to over-exploit resources.

79. Many delegates spoke of seeking international management agreement and international cooperation for optimal exploitation as well as international collaboration to discourage unauthorized, often more harmful fishing. One delegate appealed to fellow delegates to request their countries' action to deter unauthorized fishing in others' waters and others asked for countries in establishing their exclusive economic zones to recognize the former traditional fishing grounds of established wide-ranging fleets.

80. Mention was made of time zonation, both seasonal and with day-to-day sharing of common waters between different types of fishing. A few countries impose total catch limits in different ways, usually as pre-set fishing quotas. Net mesh size and other gear controls have been adopted by several countries although one spoke of enforcement problems. In one country artificial reefs have been created to encourage aggregation as well as to impose physical restraint to dynamic fishing.

81. One delegate spoke of sea ranching by releasing seed, especially for anadromous species, whilst others mentioned control of movement of spawners, eggs and larvae when these are in short supply.

82. Utilization of catch, by-catch and better post-harvest use was discussed with one favourable case of specialized utilization tied to management control.

83. In addition, mention was made from both developing and sophisticated fleet countries of the importance of energy-saving efforts to minimize costs.

84. Another interesting management point was raised with efforts to bring full and part-time and recreational fishermen and government staff together to understand each others' problems end help find commonly acceptable solutions.

85. Indonesia's (as yet) unique step in progressively banning all trawling provoked interest in reasons and results. The reasons were three-fold: to protect the small-scale (traditional) fishery, to conserve resources and to minimize social friction between fishing classes. Whilst it is too soon to gauge long-term results, there are indications that intermediate effects seem to justify the measures.

86. In the accelerating emphasis on aquacultural development, most countries in the regions spoke of particular efforts to extend brackish waters and coastal fish culture, including cage fish, shellfish and seaweed culture, fish ranching and breeding for free release.

87. Different types of aquaculture included polyculture and mixed farming, with livestock or rice. Both fish-with-rice and alternating crops of fish and rice were found to be profitable. Note was made of economic limitation to intensification of some fish farming systems whilst other comment on running water fish culture indicated very large production in area terms where great quantities of water flow are available.

88. Many countries find that fish and shellfish seed shortages are major problems and have undertaken extensive programmes to supply them. Some countries have attempted more efficient (not necessarily more intensive) fish culture to reduce production costs. Controlled lease costs and longer leases encourage small-scale fish farming. One country mentioned the utilization of biogas plant by-product for fish feed.

89. Problems and constraints presented, included: investment costs, energy costs, sparse populations of fish in offshore waters, loss of manpower to other industries, increasing food demand from expanding populations, control of credit and its repayment and unsuitable development steps in the past which have proved wasteful or harmful.

90. It appears that the most important problem facing nearly all fisheries was the shortage of information and the increasing need for information systems and data bases.

91. There were suggestions, offers and recommendations of common interest: one delegate talked of provision of research facilities in exchange for fishing quotas. Another suggested that a pool of experts from each country in the region should meet to optimize fishing efficiency in shared fishing waters. Offers were made for training on-the-spot and abroad, including practical fishing and fish handling, whilst research facilities were also offered in one country, for studies including fish genetics and pathology. One delegate suggested that countries should make careful comparison of all costs and returns of culture and capture fisheries to help the choice of development emphasis.

92. It was concluded that this agenda item will prove useful to many delegates and particularly to the committees of both commissions, regional and sub-regional programmes and international executing and donor agencies in helping to determine priorities of future activities. It also indicated the need and value of regional cooperation for optimum management and rational development.

OPPORTUNITIES AND NEEDS FOR REGIONAL COOPERATION

93. The Commissions discussed this matter on the basis of two documents dealing with shared stocks (IOFC/IPFC/82/4), and with more general questions of regional cooperation (IOFC/IPFC/82/3).

94. In relation to shared stocks it was pointed out that the draft text of the new Law of the Sea calls on the States concerned, when the same stock or stocks of associated species, occur within the exclusive economic zones of two or more coastal States, to seek directly or through appropriate subregional or regional organizations to agree upon the measures necessary to coordinate and ensure the conservation and development of such stocks.

95. The need for such coordinated action is greatest when the rate of interchange of fish between different national exclusive economic zones, or between national EEZs and the high seas is high and when the stock concerned is being heavily fished. In the IOFC/IPFC region many of the stocks remain within a single EEZ or mix only slowly between one EEZ and another. However, there are some stocks for which there is a high degree of interchange between EEZs, or between EEZs and the high seas, and which are now heavily fished or are likely to become heavily fished in the near future. These include some of the larger species of tuna, *Rastrelliger* on the east side of the Gulf of Thailand, and in the Malacca Straits, several species of small pelagic fish and demersal fish in the Yellow Sea - east China Sea area, demersal fish in the Palk Strait - Gulf of Manner area, and one or more stocks of shrimp in the Gulf region.

96. In several of these cases only two or three countries are directly concerned. In these cases the countries concerned are a minority of the sub-regional Committees, and a very small minority of the parent Commission.

97. Superficially it might appear that the regional bodies might have only a minor role for determining management measures in respect of these stocks. It was stressed that this was not the case. Regional bodies, and especially their subsidiary bodies can play important roles, particularly in the preliminary stages of reviewing the nature of the sharing of the stocks and assessing the state of exploitation, which lead up to the final stage of deciding on specific management actions.

98. More generally it was recognized that the Commissions, and their subsidiary bodies, have very important roles in all forms of cooperation, particularly in fostering TCDC (Technical Cooperation between Developing Countries) and ECDC (Economic Cooperation between Developing Countries). The importance of these activities had been increased as a result of the deliberations of the United Nations Conference on the Law of the Sea, and the new opportunities and responsibilities given to coastal States in their exclusive economic zones.

99. In this connection the Commissions welcomed the action that had been taken by FAO to modify their structures and constitutions, and to make them more action-oriented. These actions had included the establishment of a number of sub-regional Committees, with more limited membership, and rather more homogeneous problems, than the parent Commissions, and in the case of IPFC, a Standing Committee on Resources Research and Development (SCORRAD).

100. The Commissions believed that these subsidiary bodies were very appropriate mechanisms for the delivery of TCDC and ECDC, as well as other forms of cooperation. While these bodies were already doing very useful work in these directions, the Commissions believed that both the sub-regional Committees, and the various technical groups, including SCORRAD and its working parties, should be strengthened and given more support by FAO and other agencies, in order to be even more effective.

101. In the case of direct TCDC, in the sense of sending an expert in some particular field from one developing country to another in which expertise in that field was lacking, it was important to identify on the one hand what particular skills were available in a given country, and on the other hand, the specific needs of a country requiring such assistance. The Commissions, and their subsidiary bodies could be very effective in making such identification, and matching skills to needs. In particular it was suggested that the Secretariat could maintain a register of training institutions in member countries which could be matched to requests for training. In this connection it was noted that among countries already supplying such training the Republic of Korea was providing facilities, at which over 50 people from developing countries were receiving training.

102. The value of meetings of international bodies for general exchange of experience and information was also stressed. It was noted that many such exchanges had taken place at the present session both inside and outside the formal meetings. Such exchanges were even more useful in sub-regional committees, or technical bodies. A number of topics were identified for which regional or sub-regional consultations and exchange of experience would be useful.

103. Particular mention was made of the problems of Monitoring, Control and Surveillance (MCS), i.e., the process by which countries can ensure that fishermen (both their own nationals and foreign vessels) are complying with regulations, particularly those concerned with the management of fisheries and the conservation of resources. MCS can be expensive, especially when, as in the case of many countries in the IOFC/IPFC region, the area to be covered is very large.

104. FAO had appointed an officer in Rome with special responsibilities for MCS matters. He had already arranged, with support from bilateral funding agencies, for a technical consultation on MCS in Rome, as well as sub-regional seminars in the South China Sea (in Indonesia) in the south-west Indian Ocean (in the Seychelles), and in West Africa. Reports of these meetings were in preparation, or had already been issued. In this connection, it was noted that some countries would appreciate receiving information from neighbour nations on foreign vessels infringing national regulations.

105. Mention was also made of the importance of looking after the fish after it was caught, including the use of fish presently discarded at sea, and the reduction of post-harvest losses. The work already being done by the IPFC Working Party on Fish Technlogy and Marketing was noted with appreciation, but it was felt this work needed to be intensified and better supported.

106. Other items which were mentioned as deserving examination on a regional or sub-regional basis included the identification of priority areas for possible future resource surveys (with particular attention to the deepwater resources of the outer continental shelf and upper continental slope), mariculture, inland fisheries in general (and the effects of fertilizer and pesticides on fish in combined fish-rice culture in particular), methods of assessing fish resources within national EEZs, the design of fishing vessel, and fishing gears appropriate to the conditions of local communities, and the implementation of pilot management schemes.

107. Tuna present special problems. It was stressed that management of these stocks required coordinated action through formal international agreements. Any action should be the result of good scientific analysis. The importance of an adequate data base for the tuna fisheries of the IOFC/IPFC region was therefore underlined.

108. The Commissions also noted examples of similar international action in other areas or other fields. The delegate of Australia drew attention to the activities of the Forum Fisheries Agency on the Southwest Pacific. These included the collection and analysis of information for management; dissemination of information on prices and shipping arrangements; and coordination of national activities on the control of foreign fishing, including the setting of fees, and reporting and control procedures, and the maintenance of a register of vessels operating in the region.

109. The observer from Unesco/IOC reported that the Intergovernmental Oceanographic Commission had been active in the Western Pacific since 1962 when a regional cooperative study on the Kuroshio and adjacent regions was started. At the end of this study in 1977 the IOC created its Programme Group for the Western Pacific, WESTPAC, which has adopted four main programmes:

(i) Ocean dynamics and climate

(ii) Marine pollution research and monitoring

(iii) Marine geology, geophysics and non-living resources, and

(iv) Marine biology and living resources.

110. The IOC was also developing a global programme of Ocean Science in Relation to Living Resources, which is being considered for adoption, at its Twelfth Assembly (3-20 November 1982). This programme has been developed in close cooperation with FAO and IOC will invite FAO to co-sponsor this programme.

111. The IOC welcomes cooperation with regional fishery commissions in matters of mutual interest in the context of this global programme or of the relevant WESTPAC programmes and this will for cooperation was reciprocated by the Commision.

FUTURE OF IOFC AND IPFC

112. When introducing this item the Officer-in-Charge of the Fisheries Department recalled that at its sixth session (Perth, Australia, 25-29 February 1980) IOFC asked the Secretariat to prepare a position paper which would consider specific suggestions to improve the efficiency of IOFC and strengthen its authority. A few months later at its nineteenth session (Kyoto, Japan, 21-30 May 1980) IPFC agreed that the position paper outlined by IOFC should also cover IPFC. At the same time it expressed the wish that the scope of the paper be extended to include the questions of the advantages and disadvantages of convening on a regular basis the sessions of the Commissions at the same time and place and of providing for joint meetings to discuss matters of mutual interest or possible merging of activities. Three distinct issues were thus raised by IOFC and IPFC: (a) options for rationalizing the work and structure of IOFC and IPFC; (b) strengthening the authority of IOFC and IPFC; (c) organization and structure of IOFC and IPFC sessions.

113. On the basis of document IOFC/IPFC/82/2 the joint meeting reviewed the existing institutional arrangements. All delegations participating in the debate agreed that the establishment of sub-regional committees serving well defined natural management areas was a very positive step and that every effort should be made to strengthen them. These subsidiary bodies provide an adequate forum for the coastal States concerned to discuss common problems of sub-regional interest. In this connection it was recognized that the Commissions themselves should continue to play a dominant role in matters of relevance to their areas of competence as a whole or of interest to all their member countries. It was felt that the functions to be performed by the parent bodies could include a role of coordination between the various sub-regional committees. The parent bodies could also discuss issues of interest to several sub-regional committees or of direct concern to member countries which are not bordering on sea area within the competence of existing sub-regional committees. The joint meeting agreed that a two-year interval between the sessions of the Commissions would be appropriate.

114. The joint meeting also reviewed the area of competence of IOFC and IPFC. Some countries suggested a boundary line defining more clearly the area of competence of each Commission in order to minimize the cases of double membership. However, a majority of delegations thought that the existing arrangements were satisfactory for the moment. The same view prevailed when the joint meeting discussed the possibility of merging IOFC and IPFC in a single body. Several delegations, however, expressed the wish that this possiblility should be again considered at future sessions of IOFC and IPFC.

115. The convening of joint meetings of the two Commissions was considered a useful practice if problems of common interest were to be discussed. It was felt, however, that there was no need to follow automatically such a practice on a regular basis in the future.

116. One delegation mentioned that the establishment of a new network of subsidiary bodies now allows the member countries to work together during the intersessional periods and that therefore the need to retain an Executive Committee in IPFC could perhaps be reviewed. While noting this point, the joint meeting advised that a decision in this regard could only be taken later on, on the basis of the actual functioning of the newly established subsidiary bodies.

117. Mention was made of the recommendation formulated by the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal at its first session aiming at including inland fisheries and aquaculture in the terms of reference of IOFC. The attention of the joint meeting was drawn to the fact that the African members of IOFC were already serviced

by the Committee for Inland Fisheries of Africa (CIFA). It was therefore suggested to amend the status of IOFC in order to include these activities in its terms of reference but being understood that IOFC should concentrate its inland fisheries and aquaculture activities in the sub-regions not covered by CIFA. The Secretariat was requested to draft the text of the proposed amendments and to circulate it to member countries in order that the necessary action could be taken by IOFC at its next session, by the Committee on Fisheries and the Council of FAO. But the implications of this change of terms of reference for IPFC's area of responsibility were not discussed and it was agreed that it would be brought to the attention of IPFC at the next session.

118. It was recalled that at its sixth session IOFC also requested the Secretariat to address such matters such as (i) the ways in which IOFC should, in the context of its new structure, adopt and submit to member countries recommendations embodying management measures, together with an indication of the implications as regards the IOFC status and (ii) the conditions under which these recommendations should be implemented by member countries with particular reference to the "objection procedure" followed in the case of other regional fishery bodies. It was noted that under its present legal structure IOFC could not make use of this procedure. One delegation considered that the inability of IOFC to implement an objection procedure which could be implemented sub-regionally by its sub-regional Committees represented a major weakness in that Commission. It was also noted that it was possible to amend the statutes of IPFC in order to adopt this procedure. Some other countries felt that this matter did not deserve urgent consideration, however, the joint meeting agreed that the agenda of the next IPFC session would include an item concerning adoption of the "objection procedure" by the Commission.

FAO WORLD CONFERENCE ON FISHERIES MANAGEMENT AND DEVELOPMENT

119. The joint meeting considered this item on the basis of document IOFC/IPFC/82/14. The Secretariat provided additional information on the discussions already held on the same subject at the five FAO Regional Conferences, including the one for Asia and the Pacific (Jakarta, Indonesia, 1-12 June 1982), as well as on the steps already taken by FAO to enlist the cooperation of the UN System and other international organizations.

120. The joint meeting expressed its appreciation of the extensive consultations being held with governments at the political and technical levels. Some delegations indicated in this regard that it would be opportune to place the draft agenda for the Conference before the Summer 1983 session of the Council of FAO. The joint meeting also expressed its satisfaction with the ways in which the Conference was being planned and detailed preparations were being undertaken.

121. The joint meeting endorsed the proposed scope and broad objectives of the World Fisheries Conference. It agreed that the major objectives should be: the formulation of strategies and programmes to achieve the optimum utilization of fish resources from the economic, social and nutritional points of view; a greater contribution of fish to national self-sufficiency in food and to world food security; the promotion of self-reliance of developing countries in the management and development of fisheries; and the fostering of international collaboration in fisheries between developed and developing ountries and also among developing countries themselves.

122. The joint meeting noted that the following topics had been identified by the FAO Regional Conferences as meriting priority attention at the World Fisheries Conference: (a) the adoption or adjustment of national policies and management techniques, including regulation of fishing effort and the monitoring, control and surveillance of fisheries, and the formulation of development strategies to take account of the extension of national jurisdiction over marine fisheries; (b) the improvement of socio-economic conditions of small-scale fisheries; (c) the promotion of cooperation in the fisheries sector between developed and developing countries and among developing countries, including: (i) conditions of access to fishery resources in exclusive economic zones and the role of joint ventures and bilateral agreements, (ii) the fostering of collaboration among countries of the same region in research, management, control and surveillance, particularly with regard to the various types of shared stocks, and (iii) the role of FAO regional and sub-regional fishery bodies and the technical support for these bodies; (d) the special needs and problems of small developing island States; (e) the problems and prospects of

inland fisheries and of aquaculture in fresh, brackish and sea waters; and (f) processing, marketing and trade issues, including: (i) establishment or improvement of international marketing and distribution systems; and (ii) development and rationalization of international trade in fish and fishery products and increased participation of developing countries in such trade.

123. In the discussions on these priority issues, particular emphasis was placed on the practical implementation of the new regime of the oceans in respect of fisheries, with special reference to the need for increased self-reliance of developing countries, the improvement of small-scale fisheries and the technical support required by sub-regional committees. As regards bilateral agreements, several delegations indicated that it would be useful to develop guidelines for their negotiation and to take particular account of the element of transfer of technology and technical cooperation included in many of these agreements. Other delegations cautioned that bilateral agreements often had unique characteristics and that the experience acquired was not necessarily applicable elsewhere. A number of specific issues were mentioned as deserving consideration, for example the protection of the marine environment, the multiple uses of coastal areas, the exploitation of unconventional resources and the conservation of marine mammals.

124. The joint meeting fully shared the view of the Director-General that the World Fisheries Conference should not only be a forum for the exchange of knowledge and experience, but should lead to practical and concrete outcomes. It noted that all FAO Regional Conferences had expressed support for the formulation of a fisheries management strategy at the national, sub-regional, regional and world levels, and for the elaboration of an extensive training programme based on the carefully assessed needs of countries and sectors and taking into account existing facilities. The usefulness of such a programme was emphasized. The joint meeting recognized in this respect that it would be necessary to elicit the active participation and support of bilateral and multilateral donor or financing agencies. It invited FAO to pursue its efforts to this end.

ANY OTHER MATTERS

125. No other matters of business were brought up at the joint meeting.

INDIAN OCEAN FISHERY COMMISSION (IOFC)

(a) Proposed Future Meetings

126. The Commission considered this item on the basis of document IOFC/IPFC/82/12 which listed the Regular Programme and Extra-Budgetary sessions of the Indian Ocean Fishery Commission and scheduled for 1982/83 and the proposed meetings for the biennium 1984/85.

127. It noted the information provided and suggested that the timing of the sessions should be carefully reviewed in order to harmonize with the preparations for and the holding of the World Conference on Fisheries Management and Development.

(b) Any Other Matters

128. Dr Labon conveyed to the Commission a message of thanks received from Mr H. Winsor in response to the scroll the Commission presented to him on his retirement in appreciation of his work as the leader of the Indian Ocean Programme.

129. The Commission, noting the low attendance at the IOFC sessions and the fact that it hampers its deliberations especially when a quorum is not present requested the Secretariat to prepare a document for its next session reviewing the members' attendance to the sessions and their participation in its activities.

(c) Election of Officers

130. Under Rule II-I of its Rules of Procedure, the Commission is required to elect at the end of every session, a Chairman and a maximum of six Vice-Chairmen who shall remain in office until the election of the new Chairman and Vice-Chairmen.

131. The following members were elected:

Chairman	India
First Vice-Chairman	Australia
Other Vice-Chairmen	Sri Lanka
	Kenya
	Iran
	Indonesia

(d) Date and Place of the Eighth Session

132. The Commission received with appreciation the offer by the Indian delegation to host the eighth session of IOFC in New Delhi in late 1984 or early 1985. The exact date and place of the session will be decided by the Director-General, in consultation with the Chairman and the authorities of the host country.

INDO-PACIFIC FISHERY COMMISSION (IPFC)

(a) Proposed Future Meetings

133. The Commission reviewed the information contained in document IOFC/IPFC/82/13. It was noted that the Secretariat would enquire about the possible funding of a session of IPFC.

134. It endorsed the suggestion that the third session of the IPFC Committee for the Development and Management of Fisheries in the South China Sea should be held in Indonesia in mid-1983. It further endorsed the proposal that the IPFC Working Party on Inland Fisheries should be held in India, early 1984 consecutive to the meeting of the IPFC Working Party on Aquaculture. It reiterated its wish that the Workshop on Riverine Fisheries should be held as soon as practicable.

135. The Commission appreciated the offer of Indonesia to host the fourth session of SCORRAD.

(b) Any Other Matters

136. The Commission proposed that one subject for the Symposium for the 22nd session scheduled for 1986 might be a review of the resources of the region and their state of exploitation. Subsidiary bodies were requested to consider the matter and present through SCORRAD a small mumber of options at the twenty-first session.

137. The Commission agreed that the reports of the IPFC subsidiary bodies also should be submitted to the plenary session of IPFC when discussing the Executive Committee's report.

(c) Election of Officers

138. Malaysia and Australia were elected unanimously as Chairman and Vice-Chairman.

139. Philippines, India and United States of America were elected as the other members of the Commission's Executive Committee.

(d) Date and Place of the Twenty-First Session

140. The Commission received with appreciation the offer by the Malaysian delegation to host the twenty-first session of IPFC in Malaysia in late 1984. The exact date and place of the session will be decided by the Director-General in consultation with the Chairman and the authorities of the host country.

ADOPTION OF THE REPORT

141. The report of the joint meeting was adopted by the joint meeting in 18 November 1982. The portions of the report relating to IOFC and IPFC separately were also endorsed respectively by the Commissions on 18 November 1982.

OUVERTURE DE LA SESSION

1. La septième session de la Commission des pêches pour l'océan Indien (CPOI) et la vingtième session de la Commission Indo-Pacifique des pêches (CIPP) se sont tenues conjointement du 11 au 18 novembre 1982 au Puri Bunga Convention Hall, Pertamina Cottages, Kuta Beach, Denpasar, Bali (Indonésie), avec la participation des représentants de 22 membres des Commissions, d'un observateur d'un pays membre de la FAO, de représentants du Programme des Nations Unies pour le développement (PNUD) et de l'Organisation des Nations Unies pour l'éducation, la science et la culture/Commission océanographique intergouvernementale (Unesco/COI) et d'observateurs de quatre organisations intergouvernementales et non gouvernementales. La liste des délégués et observateurs figure dans l'annexe A au présent rapport.

2. Les délégués ont été salués par le Président de la CPOI, l'Amiral Abdu Rachman (Indonésie). L'orateur a fait le point de la situation dans l'océan Indien. Il a noté que certains pays membres se trouvaient à des stades de développement différents et que des prospections récentes avaient mis en lumière des ressources potentielles, tandis que le potentiel de certaines grandes pêcheries est limité. Malgré cette diversité, les pays rencontrent des problèmes communs pour promouvoir l'aménagement et le développement de leurs ressources. La situation s'est déjà améliorée grâce à la formation, mais il faut poursuivre et intensifier cette action. La Conférence sur le droit de la mer a ouvert de nouvelles perspectives et créé de nouveaux problèmes en matière de droits et d'obligations. L'examen des activités des organes subsidiaires conduira à étudier les possiblités de coopération technique et économique au niveau régional entre les pays en développement qui participent à l'exploitation et à la mise en valeur des ressources en thonidés et qui pratiquent l'aquaculture en eau de mer, en eau douce et en eau saumâtre. L'orateur a appelé l'attention sur cette excellente possibilité d'examiner conjointement la structure et les travaux de la CPOI et de la CIPP, ainsi que la Conférence mondiale de la FAO sur l'aménagement et le développement des pêches.

3. Dans son allocution, le Président de la CIPP, Tengku Dato Ubaidillah (Malaisie) a remercié le Comité exécutif et le secrétariat du travail accompli au cours des deux dernières années pour développer la pêche et l'aquaculture. Il a parlé des problèmes communs qui se posent maintenant que les zones économiques exclusives des pays côtiers ont été étendues et il a souligné le contraste entre le problème de la pauvreté des petits pêcheurs et celui de l'utilisation de ces vastes zones de pêche au large des côtes. Il s'agit d'en contrôler et d'en surveiller l'aménagement. Il a exprimé l'espoir que l'assistance fournie par la FAO dans ce domaine, par le biais de plans d'action décentralisés au niveau sous-régional, comme il a été décidé à la dix-neuvième session de la CIPP, serait renforcée. Dans le domaine de l'aquaculture, un financement et un encadrement technique sont aussi nécessaires, particulièrement dans le secteur artisanal et plus spécialement pour la production d'oeufs et d'aliments afin d'aider à exploiter les vastes potentialités de l'aquaculture.

4. Dans son allocution de bienvenue, le Gouverneur de Bali, le Professeur Ida Bagus Mantra, a souligné l'importance de la pêche pour l'île de Bali et les efforts déployés par le Gouvernement pour améliorer la technologie des pêcheurs traditionnels et leur permettre ainsi d'accroître leurs revenus. Il a souhaité aux délégués un plein succès dans leurs travaux qui visent à promouvoir le développement de la pêche par la confrontation des expériences entre les pays.

5. Monsieur A. Labon, Chargé du Département des pêches de la FAO, a transmis aux délégués les salutations et les meilleurs voeux du Directeur général de la FAO, Monsieur Edouard Saouma. Il a souligné l'importance de cette première session conjointe de la CPOI et de la CIPP, qui donne aux délégués l'occasion d'examiner les questions d'intérêt commun et celles qui relèvent du domaine d'activités respectif de chacune des deux commissions. Il faut considérer la grave situation économique mondiale dans le contexte des besoins régionaux en matière de développement économique et social, d'où la nécessité de ne décider qu'après mûre réflexion des priorités dans l'utilisation des ressources.

6. L'orateur a relevé l'importante contribution des petits pêcheurs à la production alimentaire, alors que leur situation personnelle laisse tant à désirer, et il a insisté sur la nécessité d'un aménagement approprié des ressources halieutiques. Les délégués ont été invités à donner des directives à la FAO, qui assure le secrétariat de ces deux commissions, pour aider à décider de leur avenir. Les délégués ont aussi été invités à examiner les préparatifs de la FAO en vue de la prochaine Conférence mondiale sur l'aménagement et le développement des pêches. M. Labon a conclu en remerciant chaleureusement le Gouvernement indonésien des excellentes facilités mises à la disposition des délégués, dans ce cadre magnifique.

7. Monsieur S.S. Puri, Sous-directeur général et Représentant régional pour l'Asie et le Pacifique, FAO, Bangkok, a prononcé une courte allocution. Il a déclaré qu'il était un nouveau venu à la FAO, ayant pris ses fonctions à Bangkok il y a quatre mois seulement. Pour le moment, il s'efforce surtout de se familiariser avec les problèmes concernant la pêche dans la région et avec les solutions à leur apporter. Il a toutefois souligné que le rythme général de développement des pêches dans la région avait été de 3 pour cent environ au cours des dix dernières années, chiffre sensiblement supérieur à la moyenne mondiale. Huit des quinze principaux pays pêcheurs du monde sont situés dans la région. Il ne faut toutefois pas céder à un optimisme exagéré. Le nouveau Sous-directeur général/Représentant régional pour l'Asie et le Pacifique a aussi souligné la nécessité d'accorder beaucoup plus d'attention à l'aquaculture, dans le cadre d'une approche intégrée au problème général du développement de l'agriculture et de la pêche. Dans cette région, l'aquaculture a commencé à être pratiquée en Chine il y a environ 2 400 ans, mais elle n'est pas encore suffisamment développée dans beaucoup de pays. Sur les 22 millions d'hectares environ convenant à l'aquaculture, 2 millions seulement sont effectivement utilisés à cet effet. M. Puri a remercié les participants de l'intérêt qu'ils portent aux problèmes de la pêche dans la région et il leur a souhaité plein succès dans leurs délibérations.

8. En déclarant la session ouverte, le Professeur Soedarsono Hadisapoetro, Ministre de l'agriculture de l'Indonésie, a souligné que cette session conjointe des deux commissions offrait une possibilité particulièrement bienvenue d'examiner les nombreux problèmes communs rencontrés par les pays membres des deux commissions. Elle permettra aux délégués d'avoir des discussions plus approfondies et de rechercher des solutions plus efficaces à ces problèmes, dans l'intérêt de tous les pays membres. L'orateur a évoqué les perspectives ouvertes par le nouveau droit de la mer et par l'application du principe des zones économiques exclusives qui permet aux pays côtiers de contrôler de plus vastes ressources et de participer plus activement à l'aménagement de ces zones Il a souligné que le développement des flottilles de pêche nationales ou l'introduction d'arrangements appropriés pour remplacer les flottilles de pêche étrangères allaient dans l'intérêt commun des pays développés et des pays en développement. Il a rappelé aux participants que, étant donné les migrations des stocks de poisson, une collaboration régionale pour mettre au point un système d'aménagement rationnel serait très utile afin d'assurer l'utilisation efficace des ressources halieutiques et de maintenir des relations harmonieuses entre les pays voisins.

9. L'orateur a parlé de la prédominance de la pêche artisanale en Indonésie et des diverses mesures prises par le gouvernement pour protéger les petits pêcheurs traditionnels contre la concurrence injuste des flottes de pêche modernes et pour conserver les ressources, y compris l'interdiction du chalutage. Il a exprimé l'espoir que les participants formuleraient des recommandations concrètes pour améliorer le sort des petits pêcheurs traditionnels, en vue d'assurer une distribution plus équitable des fruits du développement et de la croissance économique parmi les catégories sociales défavorisées. En conclusion, il a déclaré que même si, selon les estimations actuelles, les stocks potentiels de poisson de mer et de poisson d'eau douce sont suffisants pour couvrir la demande croissante, l'aménagement efficace des ressources reste néanmoins indispensable. Avec les problèmes posés par la surexploitation, la pollution du milieu marin et les autres activités humaines, il sera difficile de satisfaire la demande escomptée si la production repose uniquement sur les activités de capture. D'où la nécessité de développer l'aquaculture en eau douce et saumâtre et la mariculture.

ADOPTION DE L'ORDRE DU JOUR ET ORGANISATION DE LA SESSION

10. Les commissions ont examiné l'ordre du jour figurant dans le document IOFC/IPFC/82/1, Rev.1 et elles l'ont adopté (voir annexe B). Les documents dont les commissions ont été saisies sont énumérés dans l'annexe C.

COMMISSION DES PECHES POUR L'OCEAN INDIEN: ACTIVITES DES ORGANES SUBSIDIAIRES

a) Comité CPOI pour le développement et l'aménagement des ressources halieutiques des Golfes

11. Le secrétariat a présenté les documents IOFC/IPFC/82/8 et 9, contenant les rapports des troisième et quatrième sessions du Comité CPOI pour le développement et l'aménagement des ressources halieutiques des Golfes qui se sont tenues à Doha (Qatar) du 28 au 30 septembre 1980 et du 19 au 21 avril 1982 respectivement. Le Comité a examiné quatre grandes questions et formulé les conclusions et recommandations suivantes:

Pêche crevettière dans les Golfes

12. La nécessité de maintenir la saison de fermeture de la pêche à la crevette a été confirmée. Un certain nombre de données biologiques de base nécessaires pour l'aménagement de la pêche font toutefois défaut. A la troisième session, il a donc été recommandé ce qui suit:

a) la saison de fermeture de la pêche crevettière en 1981 devrait, comme l'année dernière, aller du 1er février au 30 juin;

b) la FAO devrait préparer un projet de recherche sur les pêcheries de crevettes, en vue d'obtenir des informations sur l'emplacement et les saisons de reproduction des crevettes et l'habitat des juvéniles, pour déterminer la distribution de la population ainsi que l'âge et la taille des crevettes à la maturité, ainsi que toutes autres études biologiques nécessaires. Grâce à ces informations, il sera possible de déterminer les caractéristiques de méthodes de pêche appropriées et les captures maximales autorisées (effort optimal) et de proposer des mesures d'aménagement pour les opérations de pêche à la crevette. Cette proposition de projet devrait être soumise aux pays de la région avant la fin de l'année, pour qu'elle puisse être mise en forme en vue de sa présentation à la sixième session de la Conférence des ministres arabes de l'agriculture des Etats du Golfe et de la péninsule Arabique;

c) avant d'en arriver là, la FAO devrait organiser la visite d'un spécialiste de la pêche crevettière dans les pays de la région pour étudier le descriptif de projet proposé et recueillir l'opinion des gouvernements à ce sujet. Au cas où le spécialiste ne serait pas en mesure de se rendre dans certains pays de la région, le descriptif de projet devrait leur être envoyé par la poste.

13. Ces recommandations ont été légèrement modifiées et complétées à la quatrième session, comme suit:

a) il est important et nécessaire d'observer une saison de fermeture pour la pêche à la crevette. La durée de cette saison devrait être déterminée par chaque pays membre en fonction des informations disponibles et des conditions écologiques et socio-économiques;

b) il faudrait, en ce qui concerne la crevette, éviter toute augmentation de l'effort de pêche (ne pas délivrer de nouveaux permis et limiter la taille des embarcations);

c) une collecte continue de données statistiques devrait être organisée dans les pays membres afin de suivre l'évolution des captures de crevettes. Ces données seraient communiquées au secrétariat du Comité pour analyse et distribution aux pays membres, ainsi qu'au secrétariat général de la Conférence des ministres arabes du Golfe et de la péninsule Arabique.

14. Un stage d'études pratiques sur l'évaluation des stocks de crevettes de la côte occidentale du Golfe, entre l'Iran et la péninsule Arabique, a été organisé au Koweït du 17 au 22 octobre 1981.

Ressources halieutiques autres que la crevette

15. Le Comité a conclu ce qui suit à sa quatrième session:

- Les poissons démersaux devraient être les principales ressources exploitées par les Etats du Golfe. Les poissons pélagiques ne sont pas encore totalement exploités.

- L'exploitation des deux types de ressources devrait être équilibrée, et une plus forte proportion des sous-produits de la pêche crevettière devrait être utilisée pour la consommation humaine.

- Les pays du Golfe devraient renforcer leur coopération en matière de régulation de la pêche.

- Il faudrait accorder une attention particulière aux techniques de manutention et de commercialisation du poisson qui permettent une utilisation optimum des captures.

Projets

16. Projet de développement des pêches: le descriptif de projet de développement et d'aménagement des ressources halieutiques a été soumis au PNUD.

17. Etude des pêcheries de crevettes: ce projet a suscité un vif intérêt et le Comité a recommandé ce qui suit:

i) Il faudrait remanier le descriptif de projet de la FAO afin de mettre l'accent sur les objectifs suivants:

- entreprendre une étude complète des pêcheries de crevettes dans la région des Golfes pour couvrir toutes les questions qui n'ont pas encore été traitées et pour réunir les données qui font encore défaut dans les pays en question;

- entreprendre des études à court terme des pêcheries et des crustacés à la demande de certains pays pour lesquels la pêche à la crevette n'a pas une importance majeure;

- assurer un échange de données scientifiques et techniques entre les pays membres;

- étudier les effets des différentes politiques adoptées en matière d'aménagement;

- organiser des stages d'études pratiques sur l'aménagement des pêches;

- fournir un certain nombre de consultants spécialistes des ressources halieutiques et de l'aménagement, pour satisfaire les besoins et les desiderata de certains pays membres, comme indiqué à de précédentes réunions du Comité.

ii) Il a été souligné que ce projet serait considéré comme le premier d'une série qui pourraient être étendus dans l'avenir en fonction de l'évolution des besoins de la région. La FAO devrait examiner la possibilité de s'assurer le concours de certaines institutions nationales particulièrement compétentes qui existent dans la région, comme l'Institut koweïtien de la recherche scientifique, le Département océanographique de l'Université de Qatar et le Départment océanographique de l'Université King Faisal d'Arabie saoudite, en passant avec elles des sous-contrats qui permettraient de mener à bien certaines des activités du projet, à condition que ces institutions, dans le mois suivant la réception de la correspondance de la FAO à ce sujet, informent l'Organisation de la contribution qu'elles peuvent apporter à la réalisation de certaines des activités prévues dans le projet préparé par la FAO.

18. Le représentant de l'Iran a exprimé le voeux que l'Institut des pêches de son pays soit aussi contacté en vue de participer à l'exécution de certaines activités du projet, car ce programme coïncide avec des projets de recherche nationaux.

Services de consultation technique et d'information sur la commercialisation du poisson

19. Les services fournis par INFOPESCA et INFOFISH dans leur région respective ont été jugés extrêmement utiles, mais l'excédent actuel de poisson dans les pays de la région est très limité. Le Comité a donc estimé que le moment n'était pas encore venu de mettre en place un service de ce genre dans cette région.

20. Les rapports (documents IOFC/IPFC/82/8 et 9) et leurs recommandations ont été entérinés par la Commission et l'accent a été mis particulièrement sur la manutention et la commercialisation du poisson, étant donné l'augmentation rapide des ressources alimentaires qui pourrait être obtenue de cette façon.

b) Comité CPOI pour le développement et l'aménagement des pêches dans le sud-ouest de l'océan Indien

21. Ce Comité a tenu sa première session à Le Chaland (Maurice) du 22 au 24 avril 1981, et il a examiné trois grandes questions.

Développement des pêches

i) Pêche côtière: l'accent a été mis sur la nécessité d'améliorer les informations sur les pêches, d'améliorer la pêche traditionnelle, de transférer des technologies appropriées dans la région, de construire des bateaux de pêche mieux conçus, de développer l'aquaculture, de fixer des priorités pour le développement de la pêche artisanale, de développer la formation et d'utiliser davantage les sous-produits de la pêche. L'utilité de la pêche expérimentale pour faciliter la planification des pêches a été soulignée et le Comité a recommandé d'organiser et d'exécuter des activités de pêche expérimentale dans cette zone, au niveau régional.

ii) Pêche au thon: le Comité a demandé à être pleinement informé des activités du Projet FAO/PNUD pour l'aménagement des stocks de thons des océans Indien et Pacifique. Il a estimé en outre qu'il fallait former les pêcheurs locaux à ce genre de pêche et qu'une assistance était aussi nécessaire pour mettre au point des techniques de capture des thons de surface.

Soutien de l'administration et de l'aménagement des pêches

22. Le Comité a estimé qu'il fallait développer la coopération régionale dans les domaines suivants: préparation et exécution d'inventaires de certaines ressources, amélioration des statistiques, contrôle et surveillance des pêcheries existantes et constitution d'une solide base de données sur la pêche.

23. La phase préparatoire du Projet régional de développement et d'aménagement des pêches dans le sud-ouest de l'océan Indien est devenue opérationnelle en octobre 1981. A ce titre, on a commencé par organiser aux Seychelles en septembre 1982 un séminaire régional sur le contrôle et la surveillance de la pêche, en application d'une recommandation du Comité. Un stage d'étude pratique sur la pêche traditionnelle est prévu pour décembre 1982.

24. La Commission a approuvé le rapport et ses recommandations.

25. Tout en apportant son appui à l'adoption des conclusions et recommandations de la première session du Comité CPOI pour le développement et l'aménagement des pêches dans le sud-ouest de l'océan Indien, une délégation a rappelé le caractère particulier de l'aménagement des thonidés qui font l'objet d'une disposition spéciale dans le texte de la Convention sur le droit de la mer, prévoyant partout où cela est possible la création entre Etats, d'organisations spécifiques. Elle a notamment rappelé l'existence et le fonctionnement d'organismes tels que la Commission internationale pour la conservation des thonidés de l'Atlantique (CICTA) et la Commission inter-américaine du thon tropical (CITT), ainsi que les efforts constants fait par son pays pour favoriser la constitution entre Etats intéressés de tels organes.

c) Comité CPOI pour le développement et l'aménagement des pêches dans le golfe du Bengale

26. Les rapports de la première session du Comité CPOI pour le développement et l'aménagement des pêches dans le golfe du Bengale, tenue à Colombo (Sri Lanka) du 7 au 9 décembre 1981 (IOFC/IPFC/82/11), et d'une session spéciale de ce Comité tenue à Bali (Indonésie) les 11 et 12 novembre 1982 (IOFC:DM/BB/82/REP), ont été présentés par le président du Comité, M. Anura Weeraratne (Sri Lanka).

27. M. Weeraratne s'est à nouveau félicité de la création de comités sous-régionaux desservant des aires d'aménagement naturelles et de l'aide fournie par la FAO sous forme de services techniques pour assurer un transfert effectif de technologie, renforcer l'autosuffisance des pays côtiers en voie de développement et promouvoir la coopération entre eux.

28. En examinant le rapport de la première session, il appelé l'attention de la CPOI sur une recommandation à l'effet que le Comité s'occupe aussi de la pêche dans les eaux saumâtres et intérieures. Le Comité n'ignore pas que les pêches intérieures ne sont pas actuellement comprises dans le mandat de la CPOI. Il a donc décidé de transmettre cette recommandation à la CPOI pour que le Comité des pêches et le Conseil de la FAO lui donnent éventuellement les suites nécessaires. Tout en prenant note de cette question, la Commission a décidé de l'examiner sous le point 9 de l'ordre du jour de la session conjointe, qui portera sur tous les problèmes institutionnels.

29. Le président a aussi souligné la nécessité d'installer le secrétariat du Comité dans la région. Pour rendre le travail plus efficace et plus rapide, la FAO devrait se pencher sérieusement sur ce problème. Le Chargé du Département des pêches de la FAO a déclaré que la FAO desservira, comme elle en a l'obligation, ses organismes régionaux et sous-régionaux et fournira un secrétariat adéquat.

30. Mention a aussi été faite de la session spéciale que le Comité a tenue à Bali les 11 et 12 novembre 1982 pour discuter du siège du Projet de développement et d'aménagement des pêches dans le golfe du Bengale. La CPOI a noté avec satisfaction que l'Inde et le Sri Lanka s'étaient mis d'accord sur le siège et les activités du projet GCP/RAS/040/SWE "Développement de la pêche artisanale dans le golfe du Bengale". Le Comité a souscrit à la proposition suivante, soumise conjointement par les deux pays:

- Le siège du projet GCP/RAS/040/SWE restera à Madras jusqu'à la fin du projet.

- La mise au point de modèles de bateaux de pêche se fera au Sri Lanka, en utilisant l'infrastructure existante, tandis que les activités qui présentent un intérêt essentiel pour l'Inde continueront à être menées en Inde.

- Le nouveau personnel international (un technologiste des pêches et un spécialiste de l'aquaculture) sera installé à Colombo.

31. Les délégations de l'Inde et du Sri Lanka ont tenu à remercier sincèrement, à cette occasion, le secrétariat de la FAO, et en particulier M. A. Labon, de leur assistance très précieuse qui a permis d'aboutir à cette solution à l'amiable. Le représentant du PNUD a déclaré que la solution de ce problème accélèrerait la mise en oeuvre du projet RAS/81/051 "Promotion du développement et de l'aménagement des pêches dans le golfe du Bengale". Il a invité instamment les pays participants à tirer pleinement et rapidement parti de leur structure institutionnelle sous-régionale pour permettre la poursuite de la coopération sous-régionale dans le secteur des pêches, par la participation nationale directe au projet, après que l'assistance financière du PNUD aura pris fin. M. Weeraratne et le Chargé du Département des pêches ont rendu compte des contacts qu'ils ont eus avec la Birmanie en vue de la participation de ce pays aux travaux du Comité 1/. La décision définitive est encore à l'étude des autorités birmanes compétentes. Quant à la participation de l'Indonésie, l'Amiral Rachman a informé la CPOI que son pays a décidé de devenir membre du Comité.

32. L'attention de la Commission a été appelée sur le paragraphe 49 du rapport de la première session du Comité, qui suggère de renforcer la coopération avec les autres programmes de développement des pêches qui sont exécutés directement par des donateurs bilatéraux. A ce propos, la Commission a demandé au secrétariat de fournir de plus amples renseignements sur les programmes de ce genre exécutés dans l'océan Indien et dans la région indo-pacifique, pour éviter les doubles emplois. On a reconnu que la FAO est particulièrement bien placée pour coordonner les divers apports des programmes d'assistance multilatéraux et bilatéraux. La FAO serait prête à coordonner l'assistance et à fournir au Comité des informations sur l'aide bilatérale, à condition que les gouvernements des pays tant donateurs que bénéficiaires manifestent le désir que l'Organisation s'acquitte de cette tâche et fournissent les informations indispensables. Le secrétariat s'est engagé à entreprendre les démarches nécessaires.

33. On a estimé que les mesures d'aménagement appliquées dans d'autres parties du monde intéresseraient les membres de la Commission. Le secrétariat a été invité à préparer un document d'information détaillé à ce sujet, pour une prochaine session.

34. La CPOI a approuvé le rapport de la première session du Comité, complété par le rapport de la session spéciale.

COMMISSION INDO-PACIFIQUE DES PECHES: ACTIVITES DES ORGANES SUBSIDIAIRES

35. En présentant ce point de l'ordre du jour, le secrétariat a noté que, à l'exception du Comité spécial de l'aménagement des stocks de thons de l'Indo-Pacifique, tous les organes subsidiaires de la CIPP rendent compte à la Commission par l'intermédiaire de son Comité exécutif. En examinant les rapports des cinquante-neuvième et soixantième sessions du Comité exécutif, soumis comme documents de travail, la Commission examine aussi, par voie de conséquence, les rapports des autres organes subsidiaires, qui ont été mis à la disposition de la Commission. Il a été décidé de limiter cet examen aux questions qui ne sont pas couvertes par d'autres points de l'ordre du jour.

36. On a noté que les groupes de travail de l'aquaculture et des pêches intérieures ne s'étaient pas réunis depuis 1980 et 1978 respectivement. Il apparaît souhaitable qu'ils se réunissent l'un à la suite de l'autre. La prochaine réunion du Groupe de travail des pêches intérieures a donc été repoussée, et les deux groupes de travail se réuniront au début de 1984. Un stage d'études pratiques sur la planification des pêches intérieures a été organisé avec succès en août 1982 et la Commission a été informée qu'à l'avenir on rechercherait particulièrement à obtenir la participation des pays sans littoral.

1/ Voir paragraphe 9 du rapport de la première session du Comité CPOI pour le développement et l'aménagement des pêches dans le golfe du Bengale, Colombo (Sri Lanka), 7-9 décembre 1981.

37. Le Groupe de travail de la technologie et de la commercialisation du poisson s'est réuni tout récemment (2-5 novembre 1982, Serdang, Malaisie). Son projet de rapport est disponible. Le stage d'études pratiques a réuni un bon nombre de participants - 65 au total - et constitue un exemple de coopération régionale permettant d'accroître l'efficacité du travail accompli sur place et d'éviter les recherches qui font double emploi. Le gouvernement australien a été remercié de son aide financière pour ce stage.

38. La Commission a aussi noté que les pays membres ont demandé que soient rendus disponibles les rapports auxquels donne lieu le Programme général FAO d'assistance au développement et à l'aménagement des pêches dans les zones économiques exclusives. On a expliqué que ces rapports doivent recevoir l'approbation technique des pays intéressés et que leur diffusion doit aussi être autorisée. Cette question est suivie de près et les rapports seront communiqués à ceux qui le demanderont quand les autorisations nécessaires auront été obtenues.

39. Le Comité de la CIPP pour le développement et l'aménagement des pêches dans la mer de Chine méridionale a tenu sa deuxième session à Bali les 8 et 9 novembre 1982, immédiatement avant la réunion de la Commission. Comme les questions inscrites à son ordre du jour ont été longuement discutées par les pays intéressés, la Commission a décidé de ne pas examiner en détail le rapport du Comité. Il s'agissait surtout d'examiner ce qui arriverait après que le PNUD aura cessé de financer le Programme en mer de Chine méridionale en 1984 et après le départ, à la fin de 1982, du Directeur du programme, qui faisait office de secrétaire du Comité. On a noté que la FAO fournirait un secrétariat pour le Comité.

40. Le Comité permanent sur la recherche et le développement des ressources (SCORRAD) s'est réuni à Sydney en Australie du 28 avril au 4 mai 1982. Son rapport est maintenant disponible. La Commission a été heureuse de voir que ce rapport avait été publié rapidement, comme un document indépendant important. Le Comité exécutif a surtout noté que le rapport (paragraphe 12) recommandait d'améliorer les communications entre spécialistes et administrateurs. La Commission a estimé qu'il s'agissait d'un problème important et qu'il conviendrait peut-être d'organiser un séminaire ou un stage d'études pratiques.

41. L'ancien président du SCORRAD a noté que les activités de ce Comité sont indispensables à l'efficacité de la recherche et qu'il est rassurant de voir que ses recommandations sont appliquées. L'utilité d'une telle instance a été soulignée car elle permet de faire examiner le travail des jeunes spécialistes par leurs pairs.

42. Le nouveau président du SCORRAD a informé la Commission que certains se préoccupent de ce que ce Comité ne compte que des biologistes et estiment qu'il faudrait que d'autres disciplines, comme la technologie et l'économie, y soient aussi représentée. Comme le mandat du Comité ne s'y oppose pas, la Commission a invité les pays membres qui ont des experts de ces disciplines à les inclures dans leurs délégations aux réunions futures du SCORRAD.

43. Le délégué de l'Indonésie a déclaré que l'interdiction du chalutage décrété par l'Indonésie avait été évoqué au SCORRAD, et il a indiqué à la Commission les raisons de cette interdiction et les résultats obtenus à ce jour.

44. Une délégation a demandé que la FAO prévoie, dans son programme d'assistance, une assistance technique pour la formation aux méthodes de pêche du thon.

45. En conclusion, le président a exprimé, au nom de la Commission, sa gratitude à l'ancien président du SCORRAD, ainsi qu'aux présidents des groupes de travail et des organes subsidiaires de la Commission.

46. La Commission a noté que des colloques intéressants avaient toujours été organisés à l'occasion des sessions de la Commission. Elle a estimé que l'absence de colloque à la session actuelle ne doit pas être considérée comme un précédent. Il sera toutefois difficile d'en organiser un à l'occasion de la vingt-et-unième session, en raison des travaux préparatoires de la Conférence mondiale de la FAO sur l'aménagement et le développement des pêches, mais il faudrait le faire lors de la vingt-deuxième session. On pourrait choisir comme thème éventuel les ressources halieutiques de la région (y compris les eaux intérieures) et leur degré d'exploitation, mais il faudra tenir dûment compte des besoins des organes subsidiaires avant de décider du thème du prochain colloque.

EXAMEN DES ACTIVITES REGIONALES

a) Enquête sur les ressources en petits thons de l'océan Indien et du Pacifique occidental (GCP/RAS/099/JPN)

Mise en valeur et aménagement des ressources en thons dans la région indo-pacifique (INT/81/034)

47. Le secrétariat a rendu compte des divers projets régionaux et inter-régionaux sur le thon, financés par le PNUD et par des organismes bilatéraux. Les projets du PNUD portent sur la création et le fonctionnement d'un centre d'information couvrant les statistiques des captures et les données analogues sur la pêche au thon dans l'océan Indien et dans le Pacifique occidental, en vue de constituer une base de données appropriées pour le développement de la pêche au thon. Le premier projet (INT/79/026) et le projet actuel (INT/81/034) avaient été incorporés initialement dans les structures du programme concernant la mer de Chine méridionale. Le projet a maintenant été transféré dans un siège permanent à Colombo (Sri Lanka). Le personnel actuel se compose d'un directeur de projet et d'un statisticien (financés par le PNUD) et d'un biologiste (financé par le Japon), mais un consultant et d'autres formes d'assistance sont prévus dans des domaines tels que la mise au point de systèmes informatisés appropriés de traitement des données.

48. Dans le cadre du programme général relatif aux ZEE (GCP/INT/398/NOR), la Norvège a financé le rassemblement de données biologiques et statistiques concernant l'Indonésie et les Philippines. Le projet a pris fin, mais ce travail est poursuivi par des institutions nationales, avec une aide modeste du personnel du projet du PNUD, pour l'analyse des données.

49. Le Japon a fourni des fonds dans le cadre du projet (GCP/RAS/099/JPN) pour un projet continu d'aide aux recherches biologiques sur les ressources en thons - et en particulier en petits thons - de l'océan Indien et du Pacifique occidental. Ces deux projets bilatéraux complètent le projet du PNUD.

50. En réponse à une question concernant le financement à long terme, le représentant du PNUD a déclaré que le projet relatif aux thons était le dernier des grands projets financés dans le secteur des pêches au titre du programme interrégional du PNUD. Un financement sera fourni jusqu'à la fin du cycle actuel, en 1985, mais le PNUD a pour règle d'éviter les engagements de longue durée (c'est-à-dire pour une période de plus de cinq ans). L'orateur a noté que les promesses de contribution au PNUD sont en train de tomber sensiblement au-dessous des chiffres de planification. Toutefois, la part de l'agriculture (qui comprend les pêches) va sans doute augmenter, au moins dans les programmes régionaux. Quelle est la proportion qui ira aux projets halieutiques (y compris au projet sur les thons)? Cela dépendra de l'attitude des délégations nationales aux réunions régionales pertinentes du PNUD.

51. En réponse à une question, on a signalé que la forme sous laquelle les informations sont fournies aux pays est soigneusement examinées. On est en train de demander conseil à d'autres organismes régionaux (Commission internationale pour la conservation des thonidés de l'Atlantique (CICTA), Commission inter-américaine de thon tropical (CITT), Commission du Pacifique sud (CPS)), qui rassemblent et traitent déjà des données sur les thons. Les pays sont invités à nommer, auprès du projet, des correspondants nationaux auxquels on demandera quel est à leur avis la forme d'output la plus appropriée.

52. On a souligné la valeur potentielle des informations fournies par le projet, pour le développement des pêcheries nationales de thon (par exemple pour entreprendre des études de faisabilité). La pêche au thon est généralement une entreprise coûteuse, et les pays ont besoin des meilleures informations possibles sur les taux de capture et l'emplacement des meilleures zones de pêche. Au moment où ce sont des bateaux étrangers qui capturent la plus grande partie des grands thons, spécialement dans l'océan Indien, et où les prises de petits thons - et de grands thons de plus petite taille - pourraient être sensiblement augmentées, la conservation pose un problème moins urgent. En dehors des informations fournies par le projet, les pays qui ont l'intention d'accroître leurs captures pourraient utiliser avec profit des conseils sur les techniques appropriées de pêche au thon (y compris l'utilisation de dispositifs pour attirer le poisson) et de transformation et de commercialisation des prises.

53. On a noté que M. Bayliff (CITT), convocateur du Groupe de travail ad hoc de la CIPP sur le marquage des thons et des marlins, a continué à échanger avec les pays des informations sur le marquage des thons.

b) Réseau de centres d'aquaculture en Asie

54. Le Coordinateur du projet a présenté le programme et décrit ses objectifs et ses réalisations. De nombreuses délégations l'ont félicité du travail accompli dans ces centres mais certaines ont estimé qu'il faudrait améliorer les installations de formation pour qu'elles puissent accueillir un plus grand nombre d'étudiants des différents pays. Il a aussi été suggéré d'élargir le champ d'activité de ce réseau pour y inclure par exemple la pêche en réservoir, l'amélioration de la production d'oeufs de poisson, l'aquaculture en étangs irrigués et les maladies et parasites des poissons. L'Indonésie a offert des sites pour installer les centres principaux qui s'occuperaient de ces deux dernières questions.

55. L'importance de ce projet et des projets d'aquaculture en général a été soulignée, étant donné le rôle croissant de l'aquaculture dans le monde entier. Il faut toutefois faire preuve de circonspection car les superficies disponibles pour l'aquaculture sont limitées et, de ce fait, l'aquaculture pourrait seulement conmpléter mais non pas remplacer les protéines provenant de la pêche de capture. En outre, dans de nombreuses régions, ce n'est plus le manque de connaissances techniques qui freine le développement. Ce sont les facteurs sociaux et économiques qui deviennent plus importants.

56. L'utilité des projets d'aquaculture, et en particulier des projets nationaux, pourrait beaucoup augmenter si des personnes venant de pays autres que le pays hôte pouvaient les visiter. A ce propos, l'observateur de l'Unesco a informé les participants qu'il existe des fonds limités pour l'échange de spécialistes dans le programme de la Division des sciences marines et que des voyages d'étude prévoyant notamment la visite de centres d'aquaculture ont été organisés.

c) Services d'information et de conseils sur la commercialisation du poisson dans la région de l'Asie et du Pacifique (INFOFISH) (GCP/RAS/096/NOR)

57. Une présentation audio-visuelle a été faite pour illustrer les objectifs et les activités du projet, qui fournit trois types de services: promotion commerciale, conseils techniques et information sur la commercialisation. Le directeur du projet a en outre informé les Commissions qu'une consultation technique des bureaux de liaison nationaux d'INFOFISH, tenue en mai 1982, avait recommandé de donner à ces services un caractère permanent et avait demandé à la FAO de consulter les gouvernements des pays participants en vue de créer un organisme intergouvernemental qui serait financé par le produit de la fourniture de services au titre du projet, par des contributions gouvernementales et par des contributions limitées de donateurs. Avec le concours du Comité de coordination du projet, un avant-projet de partage des coûts est actuellement mis au point au siège de la FAO. Il portera sur la période transitoire 1984-86 durant laquelle les recettes provenant de la fourniture de services au titre du projet pourraient augmenter progressivement, avec une réduction correspondante des contributions qui seraient mises à la charge des gouvernements. On se propose de consacrer principalement aux activités de type CTPD/CEPD un financement limité PNUD/donateurs. On espère en outre que les consultations avec les gouvernements en vue de la création d'un organisme intergouvernemental auront été menées à bonne fin durant cette période.

58. Les délégations ont porté un jugement positif sur les activités du projet et ont noté avec satisfaction les avantages que les pays membres en ont retirés, au cours de son existence relativement brève. Les milieux de l'industrie et du commerce apprécient beaucoup les services fournis par le projet, qui ouvre en particulier des contacts avec de nouveaux marchés. Dans un pays, une enquête est en cours pour déterminer l'impact du projet sur l'industrie et le commerce. Les premières réponses sont très positives, malgré une certaine réticence à l'idée de payer pour les services fournis. Les publications régulières du projet - INFOFISH Marketing Digest (bimensuel) et INFOFISH Trade News (bihebdomadaire) - sont très bien accueillies. Il a été recommandé que la rédaction contrôle soigneusement les auteurs et le contenu des articles décrivant la situation de la commercialisation du poisson dans les pays membres. Il a été suggéré de resserrer les liens du projet avec d'autres organisations opérant dans des domaines voisins et d'envisager de l'ouvrir à d'autres pays. Il faudrait renforcer encore les liens avec

les producteurs et les exportateurs de poissons des pays membres. Voici certaines des autres activités qui ont été proposées: participation à des foires commerciales, cours de formation en matière de manutention et de transformation du poisson et en matière de commercialisation de produits diversifiés de la pêche, harmonisation des normes relatives aux produits de la pêche et des méthodes d'inspection, informations régulières sur les tarifs des transports maritimes et impact des activités du projet sur les exportations du secteur de la pêche artisanale.

59. Il a été recommandé que la FAO continue à rechercher des concours financiers pour maintenir ces services quand l'aide des donateurs actuels aura pris fin. En dehors des contributions des pays membres et en particulier de leur industrie des pêches, il faudrait étudier la possibilité de continuer à assurer ces services dans le cadre des activités ordinaires de la FAO. Le secrétariat a confirmé que toutes les possibilités de maintenir ces services seraient soigneusement étudiées. Des problèmes "de seconde génération" se posent aussi "après la récolte" dans le développement de l'agriculture, des forêts et de l'élevage. INFOFISH pourrait constituer un exemple d'assistance tangible dans ce domaine.

d) Programme régional de développement de la pêche (Pacifique Sud) (RAS/73/025)

60. Le Coordinateur régional des pêches pour la région du Pacifique Sud a passé en revue la situation et les activités de développement des pêches dans cette région. Celle-ci a une superficie totale de 30 millions de kilomètres carrés environ et une population de 5 millions d'habitants. Politiquement, la région est divisée en ce que l'on pourrait appeler quatre grandes enclaves: les territoires français de la Nouvelle-Calédonie, de la Polynésie et de Wallis et Futuna, les pays du Forum du Pacifique Sud (Australie, îles Cook, Fidji, Kiribati, Nauru, Niue, Nouvelle-Zélande, Papouasie Nouvelle-Guinée, îles Salomon, Samoa occidental, Tonga, Tuvalu et Vanuatu), les trois entités qui peuvent être distinguées dans le territoire des îles du Pacifique sous tutelle des Etats-Unis (Micronésie) - Etats fédérés de Micronésie, îles Marshall et Palau, Commonwealth des îles Marianes du Nord, Guam et Samoa américaine. La superficie des terres des petits pays insulaires est réduite et, par conséquent, leur population aussi (allant de 650 habitants environ à Tokelau à 2 millions en Papouasie Nouvelle-Guinée), mais tous ces pays ont des ZEE étendues, voire immenses. Bien entendu, pour ces pays et en particulier pour ceux qui n'ont pas de base agricole ou industrielle, les ressources marines de leurs zones respectives, et principalement le thon, sont le pilier de leur indépendance économique future. Beaucoup ont négocié avec les pays pêchant dans les eaux éloignées des accords les autorisant à pénétrer dans leur ZEE pour pêcher le thon et la bonite à ventre rayé. Ces pays désirent de plus en plus être associés plus activement à l'exploitation et à l'aménagement de leurs ressources marines.

61. En ce qui concerne l'aménagement des ressources marines, le "Forum du Pacifique Sud" a formé un comité des pêches (FFC) (presque identique dans sa conception aux comités CPOI/CIPP), qui supervise le travail d'un secrétariat technique, le "Forum Fisheries Agency" (FFA), organisme de professionnels des diverses disciplines des pêches. Cet organisme est financé par l'Australie, le Fonds de coopération technique du Commonwealth (CFTC), la Nouvelle-Zélande, le PNUD/FAO et des contributions des pays membres. Deux stages d'études pratiques ont été organisés en 1982 sous l'égide du FFA: le premier, patronné par le programme FAO/ZEE, portait sur l'harmonisation et la coordination du régime des pêches et des accords sur les conditions d'accès aux zones de pêche et le second, patronné par le Centre des Nations Unies sur les société transnationales (CNUST), portait sur la négociation des droits d'accès aux zones de pêche.

62. Le projet PNUD/FAO/RAS/73/025 vise à aider les petits pays membres du "Forum du Pacifique Sud" et les entités formant le territoire des îles du Pacifique sous tutelle des Etats-Unis à valoriser le secteur de la pêche. Cette aide porte sur tout l'éventail des disciplines: conseils techniques en matière de technologie des pêches et de capture du poisson, manutention et commercialisation du poisson, législation des pêches, construction des bateaux de pêche, inventaire des ressources, stages et bourses de formation, etc. La plupart de ces activités ont une portée régionale mais, au début, certaines sont nécessairement limitées à certains pays. Au cours des deux dernières années, les responsables du projet ont cherché de plus en plus à fournir les services de consultants pour des missions de courte durée dans des secteurs critiques identifiés soit par les gouvernements soit par eux-mêmes, en faisant appel dans toute la mesure du possible à des consultants provenant de la région.

63. Comme l'indique le document IOFC/IPFC/82/5, les projets nationaux PNUD/FAO visent surtout à développer la pêche artisanale. Les gouvernements estiment que cette assistance, en augmentant les possibilités d'emploi et en créant de nouvelles sources de revenu, peut aider à freiner l'exode vers les villes des habitants des îles écartées et aussi à assurer l'auto-suffisance en protéines de poisson, avec une réduction corrélative des importations de poisson.

64. L'un des faits nouveaux les plus importants à signaler dans le domaine des techniques de pêche en cours de ces dernières années est l'introduction de dispositifs favorisant la concentration du poisson ("payaos" philippins notamment). Par exemple, les captures de voiliers et de marlins ont beaucoup augmenté avec l'emploi de dispositifs de ce genre dans les îles Cook et, au Samoa occidental, des petits catamarans pêchant à la traîne autour de ces dispositifs ont permis à ce pays d'avoir pour la première fois un excédent de poisson. Un grand nombre de ces engins ont été disposés autour des Fidji en vue de leur utilisation par la flottille commerciale de pêche à la ligne et par deux bateaux pêchant à la senne coulissante.

65. A la demande du président, l'observateur de la Commission du Pacifique Sud (CPS) a brièvement décrit les travaux de cette organisation sur les ressources en thons du Pacifique central et occidental. Il a commencé par souligner l'énorme importance de la pêche au thon pour l'indépendance économique future des pays en développement de la région de la CPS. La valeur des prises de thon réalisées par les pays pêchant dans des eaux lointaines, dans la zone de 200 milles de nombreux pays, dépasse le produit national brut de ces pays.

66. D'après les résultats du Programme CPS de prospection et d'évaluation des ressources en bonites à ventre rayé, achevé en 1981, les stocks permanents de cette espèce, dans la région de la CPS, ont été estimés à 3 millions de tonnes environ. Ces ressources se renouvellent très rapidement, en grande partie sous l'effet de la forte mortalité naturelle, si bien que la capacité de production annuelle de cette espèce est de l'ordre de 6 millions de tonnes. L'effort de pêche doit être largement distribué dans toute la région si l'on veut réaliser des captures maximum. La préparation de publications sur ces estimations et sur les évaluations de chacun des pays desservis par la CPS en est désormais au stade final.

67. Le programme en cours sur l'évaluation des stocks de thons, de marlins et de voiliers est conçu pour permettre l'évaluation des ressources en thons autres que la bonite à ventre rayé et pous donner aux pays desservis par la CPS des conseils sur les possibilités d'exploitation de ces ressources. Un vaste programme régional de statistiques halieutiques est un élément central de la stratégie de recherche globale.

DEBAT GENERAL SUR LA SITUATION ET LES PERSPECTIVES DE LA PECHE ET EXPOSES PAR PAYS

68. En présentant ce point de l'ordre du hour, le secrétariat a identifié cinq groupes de grands problèmes:

(a) Production de poisson - croissance et mise en valeur des ressources disponibles

(b) Meilleures utlisation - réduction des pertes de sous-produits et des pertes après capture

(c) Aménagement - spécialement limitation de la surcapacité

(d) Aquaculture - problèmes techniques, économiques et sociaux

(e) Environnement - interaction entre la pêche et les autres activités, notamment l'agriculture (application de pesticides), l'extraction minière et le défrichement de la végétation (par exemple mangrove).

69. Il apparaît clairement que l'aménagement joue un rôle capital, spécialement dans les zones pauvres en ressources de l'océan Indien. Il faut limiter la capacité de pêche avant que des contraintes économiques et sociales n'entraînent un gaspillage d'investissements et d'efforts. L'aménagement incombe logiquement aux gouvernements et il peut comprendre, successivement, le contrôle de la croissance, le redéploiement des ressources humaines et des mesures de contrôle direct.

70. Les délégués ont indiqué les points saillants de leurs exposés. Ceux-ci sont reproduits intégralement, dans la langue originelle de présentation, dans les annexes D à V. Voici les points essentiels qui s'en dégagent.

71. Il en ressort que, même si quelques pays convoitent encore des ressources qui dépassent leur propre capacité d'utilisation, la plupart sont conscients de la nécessité d'une mise en valeur rationnelle, par un aménagement approprié. Pour la plupart des pays, la première priorité consiste à accroître ou du moins à maintenir la production, pour couvrir les besoins alimentaires de leur propre population et pour l'exportation. Dans presque tous les pays, les mesures d'aménagement combinent cette nécessité avec le besoin de conserver les ressources. La plupart des délégués ont mentionné la nécessité prioritaire d'améliorer le sort et les possibilités d'emploi des pêcheurs, spécialement dans le secteur de la pêche artisanale. Inévitablement toutefois, les mesures de conservation des stocks côtiers normalement exploités par les pêcheurs artisanaux incitent les entreprises qui opèrent sur une plus grande échelle à exploiter les ressources plus lointaines.

72. Dans leurs exposés, les délégués ont fait état de nombreuses mesures de développement de la production.

73. Beaucoup de pays ont introduit des systèmes de crédit, spécialement pour aider les pêcheurs artisanaux et souvent par l'intermédiaire de coopératives, mais plusieurs délégués ont évoqué la difficulté de choisir les bénéficiaires les plus appropriés et de respecter le calendrier des remboursements. Certains organismes des pêches accordent des subventions, souvent pour assurer des avantages économiques et sociaux, comme l'achat local de bateaux, pour aider le secteur de la pêche artisanale ou pour développer l'aquaculture afin de réduire l'effort de pêche de capture.

74. Les programmes de formation sont presque universels. Ils couvrent de nombreux domaines et ils se situent à tous les niveaux, de la formation strictement professionnelle à la formation post-universitaire. L'accent a été mis sur la formation pratique et les délégués de nombreux pays en développement ont souligné la nécessité d'une assistance accrue. Beaucoup de pays ont des services de vulgarisation qui varient dans leur objet et dans leurs modalités de fonctionnement. Dans un pays, il y a des équipes de vulgarisation composées de pêcheurs eux-mêmes, encadrés par le gouvernement.

75. Beaucoup de pays en développement ont des entreprises d'Etat, spécialement pour développer la pêche hauturière et les investissements dans ce secteur, mais un pays a déclaré qu'il a toujours encouragé la participation du secteur privé, dont des représentants sont présents à cette session. La formule des co-entreprises est recherchée à la fois par les pays qui pêchent dans des eaux lointaines et par ceux qui désirent exploiter leurs nouvelles zones économiques exclusives au moyen de programmes de valorisation rationnelle et équitable. Certaines de ces co-entreprises sont encouragées par l'affrètement de bateaux, avec une aide du gouvernement au secteur privé et coopératif et souvent avec la collaboration de sociétés internationales. La coopération internationale a souvent été évoquée, et un pays a proposé de constituer un pool d'experts provenant des pays qui partagent des ressources communes.

76. Certains pays ont entrepris des prospections aériennes et acoustiques et des opérations de pêche exploratoire pour rechercher de nouvelles zones de pêche. Dans un cas, des opérations de chalutage profond ont été entreprises avec des résultats très encourageants, mais on ne connaît pas encore bien l'ampleur de ces opérations.

77. Certains ont estimé que l'existence d'installations à terre, comprenant non seulement des installations portuaires et des centres de débarquement, mais aussi des stations de services et des installations de manutention, encouragent les investissements dans le secteur des pêches. Les installations de transformation - entrepôts frigorifiques, fabriques de glace, fabriques de farine de poisson et conserveries - peuvent aussi encourager une plus forte exploitation quoiqu'elles réduisent les pertes de poisson débarqué.

78. Les mesures d'aménagement, qui sont souvent associées étroitement à des mesures pour encourager une production accrue, comprennent le zonage, généralement d'après la distance à partir de la côte plutôt que selon les différences de profondeurs qui sont parfois plus significatives et plus faciles à contrôler. Dans un cas, une législation a été adoptée pour libérer les routes de migration des poissons anadromes. Certains délégués ont mentionné le développement des pêches dans les eaux plus lointaines au moyen de stimulants financiers et d'autres stimulants matériels et ont parlé de la diffusion des informations provenant des prospections. Un délégué a déclaré que son pays limitait la propriété multiple des bateaux de pêche et la propriété par des non exploitants, pour réduire la tendance à la surexploitation des ressources.

79. De nombreux délégués ont déclaré qu'il fallait rechercher des accords internationaux en matière d'aménagement et une coopération internationale pour assurer une exploitation optimum, et ils ont aussi fait état de la nécessité d'une collaboration internationale pour décourager la pêche non autorisée, qui a souvent des effets particulièrement nuisibles. Un délégué a demandé à ses collègues d'inviter leur pays à prendre des mesures pour empêcher la pêche non autorisée dans les eaux des autres pays, et d'autres délégués ont demandé aux pays de reconnaître les anciennes zones de pêche traditionnelles des flottilles qui opéraient auparavant dans des eaux lointaines, lorsqu'ils délimitent leurs zones économiques exclusives.

80. Mention a été faite des limitations dans le temps, à la fois saisonnières et avec un partage au jour le jour des eaux communes entre différents types de pêche. Quelques pays imposent une limitation des captures totales, généralement sous forme de contingents préétablis. Plusieurs pays ont réglementé la taille des mailles des filets et les autres engins de pêche, mais un pays a parlé de la difficulté de faire observer cette réglementation. Dans un pays, des récifs artificiels ont été aménagés pour favoriser la concentration du poisson et pour créer des obstacles physiques à la pêche dynamique.

81. Un délégué a parlé des fermes maricoles avec lâcher d'oeufs, spécialement pour les espèces anadromes, tandis que d'autres ont mentionné le contrôle des mouvements des reproducteurs, des oeufs et des larves, quand on en manque.

82. La question de l'utilisation des prises et des sous-produits et de la meilleure utilisation après la capture a été examinée. Un cas intéressant d'utilisation spécialisée liée au contrôle de l'aménagement a été mentionné.

83. En outre, tant les pays en développement que ceux qui possèdent des flottilles de pêche modernes ont souligné la nécessité d'économiser l'énergie pour réduire les coûts.

84. Les efforts entrepris pour faire se rencontrer les pêcheurs à plein temps, les pêcheurs à temps partiel, les pêcheurs amateurs et le personnel des services gouvernementaux afin de les aider à mieux comprendre leurs problèmes respectifs et à rechercher des solutions mutuellement acceptables, est un autre point intéressant qui a été mentionné dans le domaine de l'aménagement.

85. Les délégués se sont intéressés aux raisons et aux résultats de la décision de l'Indonésie d'interdire progressivement toutes les opérations de chalutage. Jusqu'à présent, c'est le seul pays à avoir pris une décision de ce genre. Les raisons sont triples: protéger les pêcheurs traditionnels, conserver les ressources et réduire les frictions sociales entre les différentes catégories de pêcheurs. Il est encore trop tôt pour en évaluer les conséquences à long terme, mais certaines indications donnent à penser que les effets à moyen terme semblent justifier ces mesures.

86. Considérant les efforts déployés pour accélérer le développement de l'aquaculture, la plupart des pays de la région ont évoqué les mesures prises pour développer particulièrement l'aquaculture dans les eaux saumâtres et côtières (élevage en nasses, élevage de crustacés et d'algues, fermes maricoles et production d'alevins à lâcher).

87. Les différents types d'aquaculture comprennent la polyculture et l'aquaculture en association avec l'élevage du bétail ou la riziculture. Tant la production combinée de poisson et de riz que les récoltes alternées de poisson et de riz se sont révélées profitables. Mention a été faite des limitations économiques à l'intention de certains systèmes de pisciculture, tandis que d'autres délégués, parlant de la pisciculture en eau courante, ont fait état d'une très grosse production par unité de superficie quand le débit d'eau est considérable.

88. Beaucoup de pays estiment que le manque d'oeufs de poisson et de crustacés pose un problème majeur et ont entrepris de vastes programmes pour s'en procurer. Certains ont expérimenté des systèmes plus efficaces (mais pas nécessairement plus intensifs) de pisciculture pour réduire les coûts de production. Le contrôle du coût de la location des terres et les baux de longue durée encouragent les petites entreprises piscicoles. Un pays a mentionné l'utilisation des sous-produits des installations de production de biogas, pour nourrir le poisson.

89. Les difficultés et les contraintes sont les suivantes: coût des investissements, coût de l'énergie, populations de poissons clairsemées en haute mer, absorption de personnel par d'autres industries, besoins alimentaires croissants des populations grandissantes, contrôle du crédit et son remboursement et mesures de développement inadéquates dans le passé qui se sont révélées antiéconomiques ou nuisibles.

90. Il semble que la plupart des pêcheries se heurtent à un problème majeur: le manque d'informations et le besoin croissant de systèmes d'information et de données de base.

91. Voici certaines des suggestions et des recommandations qui ont été formulées: un délégué a proposé de fournir des facilités de recherche en échange de contingents de pêche. Un autre a proposé la constitution d'un pool d'experts de chaque pays de la région pour optimiser l'efficacité de la pêche dans les eaux partagées. Des offres de formation sur place et à l'étranger ont été faites, notamment en ce qui concerne les pratiques de pêche et la manutention du poisson. Un autre pays a offert des facilités de recherche, notamment sur la génétique et la pathologie des poissons. Un délégué a estimé que les pays devraient comparer soigneusement ce que coûte et ce que rapporte l'aquaculture et la pêche de capture, pour aider à fixer les priorités en matière de développement.

92. On a conclu que cette section du rapport se révèlera utile à de nombreux délégués et particulièrement aux comités des deux Commissions, aux programmes régionaux et sous-régionaux, aux organismes internationaux d'exécution et aux organismes donateurs, pour les aider à déterminer les priorités futures. Elle met aussi en lumière la nécessité et l'intérêt de la coopération régionale pour assurer un aménagement optimum et une mise en valeur rationnelle des ressources.

POSSIBILITES ET BESOINS DE COOPERATION REGIONALE

93. Les Commissions ont examiné cette question à la lumière de deux documents portant l'un sur les stocks partagés (IOFC/IPFC/82/4) et l'autre sur les aspects plus généraux de la coopération régionale (IOFC/IPFC/82/3).

94. En ce qui concerne les stocks partagés, on a signalé que le projet de nouveau droit de la mer invite les pays intéressés, quand le même stock ou des stocks d'espèces apparentées se trouvent dans la zone économique exclusive de plusieurs nations côtières, à chercher directement - ou par l'intermédiaire d'organisations sous-régionales ou régionales appropriées - à s'accorder sur les mesures à prendre pour coordonner et assurer la conservation et la mise en valeur de ces stocks.

95. Cette action coordonnée est particulièrement nécessaire quand les passages de poissons d'une zone économique nationale exclusive à l'autre ou des ZEE nationales à la haute mer sont importants et quand les stocks en question sont fortement exploités. Dans la région CPOI/CIPP, beaucoup de stocks restent dans une seule ZEE ou ne passent que lentement d'une ZEE à l'autre. Dans le cas de certains stocks qui sont maintenant fortement exploités ou qui vont l'être vraisemblablement dans le proche avenir, il y a toutefois des échanges importants entre les ZEE ou entre les ZEE et la haute mer. Il s'agit de certaines des grandes espèces de thons, du Rastrelliger dans l'est du golfe de Thaïlande et dans le détroit de Malacca, de plusieurs espèces de petits poissons pélagiques et de poissons démersaux dans la région de la mer Jaune - mer de Chine orientale, de poissons démersaux dans la région du détroit de Palk - golfe de Manner et d'un ou de plusieurs stocks de crevettes dans la région du Golfe.

96. Dans plusieurs de ces cas, deux ou trois pays seulement sont directement concernés. Ils sont minoritaires dans les comités sous-régionaux et très nettement minoritaires dans la commission dont ces comités relèvent.

97. A première vue, on pourrait penser que les organismes régionaux ne jouent qu'un rôle mineur dans la détermination des mesures d'aménagement applicables à ces stocks. Or il n'en est rien. Les organismes régionaux et en particulier leurs organes subsidiaires peuvent jouer un rôle important, spécialement aux stades préliminaires où il s'agit d'examiner la nature du partage des stocks et d'évaluer leur degré d'exploitation, pour décider finalement de mesures d'aménagement spécifiques.

98. De façon plus générale, on a reconnu que les Commissions et leurs organes subsidiaires ont un rôle très important à jouer dans toutes les formes de coopération et en particulier pour promouvoir la CTPD (coopération technique entre pays en développement) et la CEPD (coopération économique entre pays en développement). Les délibérations de la Conférence des Nations Unies sur le droit de la mer et les nouvelles responsabilités confiées aux nations côtières dans leurs zones économiques exclusives ont conféré une importance accrue à ces activités.

99. A ce propos, les Commissions ont noté avec satisfaction les mesures prises par la FAO pour modifier leur structure et leurs actes constitutifs et pour les orienter davantage vers l'action. Ces mesures ont consisté notamment à créer plusieurs comités sous-régionaux, à composition plus limitée et chargés de problèmes plus homogènes que les commissions mère et, dans le cas de la CIPP, à constituer un Comité permanent de recherche et de développement sur les ressources (SCORRAD).

100. Les Commissions ont estimé que ces organes subsidiaires constituent des instruments fort appropriés pour la CTPD et la CEPD et pour d'autres formes de coopération. Ils accomplissent déjà un travail très utile dans ces domaines, mais les Commissions ont jugé que la FAO et les autres organisations devraient renforcer et soutenir davantage aussi bien les comités sous-régionaux que les divers groupes techniques, y compris le SCORRAD et ses groupes de travail, pour les rendre encore plus efficaces.

101. Dans le cas de la CTPD directe - envoi d'un expert d'un pays en développement spécialiste d'une discipline déterminée dans un autre pays qui n'a pas d'experts dans ce secteur - il importe de déterminer d'une part quelles sont les compétences spécifiques disponibles dans un pays donné et, d'autre part, quels sont les exigences spécifiques du pays qui a besoin de cette assistance. Les Commissions et leurs organes subsidiaires pourraient s'acquitter très efficacement de cette tâche en accordant les compétences aux besoins. En particulier, on a estimé que le secrétariat pourrait établir un répertoire des institutions de formation des pays membres susceptibles de répondre aux demandes de formation. A ce propos, parmi les pays qui dispensent déjà une formation de ce genre, on a cité la République de Corée, qui forme plus de 50 personnes provenant de pays en développement.

102. On a aussi souligné l'intérêt des réunions d'organismes internationaux pour favoriser les échanges généraux d'expérience et d'informations. Beaucoup d'échanges de ce genre ont eu lieu à la présente session, au cours et en dehors des réunions officielles. Ils sont encore plus utiles au niveau des comités sous-régionaux ou des organes techniques. On a indiqué un certain nombre de sujets sur lesquels des consultations et des échanges d'expérience seraient utiles, à l'échelon régional ou sous-régional.

103. Mention a été faite en particulier des problèmes de contrôle et de surveillance, c'est-à-dire des mesures par lesquelles les pays peuvent vérifier que les pêcheurs (qu'il s'agisse de leurs propres ressortissants ou de bateaux étrangers) respectent la réglementation et en particulier celle qui porte sur l'aménagement des pêches et la conservation des ressources. Le contrôle et la surveillance peuvent être coûteux, spécialement quand la zone à couvrir est très étendues, comme c'est le cas pour de nombreux pays de la région de la CPOI/CIPP.

104. La FAO a engagé à Rome un fonctionnaire qui est spécialement chargé de ces questions. Avec un financement bilatéral, celui-ci a déjà organisé une consultation technique à ce sujet à Rome et des séminaires sous-régionaux dans la mer de Chine méridionale (en Indonésie), dans le sud-ouest de l'océan Indien (aux Seychelles) et en Afrique de l'ouest. Les rapports de ces réunions sont en préparation ou ont déjà été publiés. A ce propos on a noté que certains pays désireraient recevoir des pays voisins des informations sur les infractions à la réglementation nationale commises par des bateaux étrangers.

105. On a aussi mentionné la nécessité de bien s'occuper du poisson après la capture, d'utiliser le poisson actuellement rejeté en mer et de réduire les pertes après capture. On a noté avec satisfaction le travail déjà accompli par le Groupe de travail de la CIPP sur la technologie et la commercialisation du poisson, mais on a estimé qu'il faudrait renforcer et soutenir plus rigoureusement ces activités.

106. La détermination des zones prioritaires pour d'éventuelles prospections futures des ressources (en particulier les eaux profondes du plateau continental extérieur et de la pente supérieure du plateau continental), la mariculture, les pêches intérieures en général (surtout les effets des engrais et des pesticides sur la pisciculture combinée avec la riziculture), les méthodes d'évaluation des ressources halieutiques des ZEE nationales, la construction de bateaux et la mise au point d'engins de pêche adaptés aux exigences des communautés locales et l'application de programmes pilotes d'aménagement sont autant d'autres questions qui méritent d'être examinées à l'échelon régional ou sous-régional.

107. Le thon pose des problèmes particuliers. L'aménagement de ces stocks exige une action coordonnée, dans le cadre d'accords internationaux en bonne et due forme. Toute action doit être le résultat d'une bonne analyse scientifique, d'où la nécessité d'une base de données adéquates pour la pêche au thon dans la région CPOI/CIPP.

108. Les Commissions ont aussi noté des exemples d'action internationale analogue dans d'autres régions ou dans d'autres domaines. Le délégué de l'Australie a parlé des activités du "Forum Fisheries Agency" dans le Pacifique sud-ouest. Elles consistent notamment à rassembler et à analyser des informations utiles pour l'aménagement, à diffuser des informations sur les prix et sur le transport maritime, à coordonner les mesures nationales de contrôle de la pêche des bateaux étrangers - et notamment à fixer le barème des redevances et les procédures de signalisation et de contrôle - et à tenir un registre des bateaux opérant dans la région.

109. L'observateur de l'Unesco/COI a déclaré que la Commission océanographique intergouvernementale opérait dans le Pacifique occidental depuis 1962, époque où a été entreprise une étude régionale conjointe sur la zone du Kuroshio et sur les eaux adjacentes. A la fin de cette étude, en 1977, la COI a créé un groupe pour le Pacifique occidental (WESTPAC), qui a entrepris quatre grands programmes:

i) Dynamique et climat des océans

ii) Recherches sur la pollution marine et surveillance de celle-ci

iii) Géologie et géophysique marines et ressources marines non biologiques

iv) Biologie marine et ressources vivantes de la mer

110. La COI est aussi en train de mettre au point un programme mondial sur la science océanique dans ses rapports avec les ressources biologiques, qui a été soumis à l'adoption de sa douzième assemblée (3-20 novembre 1982). Ce programme a été élaboré en liaison étroite avec la FAO, et la COI invitera celle-ci à le coparrainer.

111. La COI s'est déclarée en faveur d'une coopération avec les commissions régionales des pêches dans les domaines d'intérêt commun, soit dans le contexte de ce programme mondial, soit dans le cadre des programmes pertinents du WESTPAC. Les Commissions ont exprimé un désir de coopération analogue.

AVENIR DE LA COMMISSION DES PECHES POUR L'OCEAN INDIEN ET DE LA COMMISSION INDO-PACIFIQUE DES PECHES

112. En présentant ce point de l'ordre du jour, le Chargé du Département des pêches a rappelé que la CPOI, à sa sixième session (Perth (Australie), 25-29 février 1980), avait demandé au secrétariat de préparer une note d'information qui envisagerait des propositions spécifiques pour améliorer l'efficacité de la CPOI et renforcer son autorité. Quelques mois plus tard, à sa dix-neuvième session (Kyoto (Japon), 21-30 mai 1980), la CIPP est convenue que le document en question devrait aussi couvrir la CIPP. D'autre part, elle a demandé d'inclure aussi dans ce document la question des inconvénients et des avantages que présentent la convocation régulière de sessions des deux Commissions en même temps et au même endroit et l'organisation de réunions conjointes pour discuter les questions d'intérêt commun ou le fusionnement éventuel des activités. Trois questions distinctes ont donc été soulevées par la CPOI et la CIPP: a) solutions possibles pour rationaliser les activités et la structure de la CPOI et de la CIPP; b) renforcement de l'autorité de la CPOI et de la CIPP et c) organisation et structure des sessions de la CPOI et de la CIPP.

113. Les participants à la session conjointe ont examiné les arrangements institutionnels existants, à la lumière du document IOFC/IPFC/82/2. Toutes les délégations participant aux débats sont convenues que la création de comités sous-régionaux desservant des aires d'aménagement naturelles bien définies est une mesure très positive et qu'il faut renforcer ces comités dans toute la mesure du possible. Ces organes subsidiaires fournissent aux pays côtiers intéressés un point de rencontre où ils peuvent examiner avec profit les problèmes communs au niveau sous-régional. A ce propos, on a reconnu que les Commissions proprement dites doivent continuer à jouer un rôle dominant dans les questions qui relèvent de leur compétence générale ou qui intéressent tous leurs pays membres. On a estimé qu'elles pourraient jouer entre autres un rôle de coordination entre les divers comités sous-régionaux. Elles pourraient aussi discuter les questions qui intéressent plusieurs comités sous-régionaux ou qui intéressent directement des pays membres qui n'ont pas de façade maritime sur les eaux relevant de la compétence des comités sous-régionaux existants. Les participants ont jugé qu'un intervalle de deux ans entre les sessions des Commissions serait approprié.

114. Ils ont aussi examiné les domaines de compétence respectifs de la CPOI et de la CIPP. Certains pays ont suggéré de délimiter plus clairement les domaines de compétence de chaque Commission, pour limiter les cas de double appartenance. La plupart des délégations ont toutefois estimé que les arrangements actuels étaient satisfaisants pour l'instant. La même opinion a prévalu quand les participants ont examiné la possibilité de fusionner en un seul organisme la CPOI et la CIPP. Plusieurs délégations ont toutefois exprimé le voeu que cette possibilité soit à nouveau examinée à des sessions futures de la CPOI et de la CIPP.

115. Il a été jugé utile de convoquer des réunions conjointes des deux Commissions quand des problèmes d'intérêt commun doivent être discutés. On a cependant estimé qu'il n'était pas nécessaire de suivre automatiquement et régulièrement cette pratique dans l'avenir.

116. Une délégation a déclaré que la mise en place d'un nouveau réseau d'organes subsidiaires permet désormais aux pays membres de travailler ensemble dans l'intervalle des sessions, de sorte que la nécessité de conserver un comité exécutif de la CIPP pourrait peut-être être reconsidérée. Tout en notant ce point, les participants ont estimé qu'une décision à ce sujet ne pourrait être prise qu'ultérieurement, à la lumière du fonctionnement effectif des organes subsidiaires nouvellement créés.

117. On a rappelé que le Comité de la CPOI pour le développement et l'aménagement des pêches dans le golfe du Bengale a recommandé à sa première session d'inclure les pêches continentales et l'aquaculture dans le mandat de la CPOI. L'attention des participants a été appelée sur le fait que les pays africains membres de la CPOI sont déjà desservis

par le Comité des pêches continentales pour l'Afrique (CPCA). On a donc proposé d'amender les statuts de la CPOI pour inclure ces activités dans son mandat, étant entendu toutefois que la CPOI devrait concentrer son action sur les pêches continentales et l'aquaculture dans les sous-régions qui ne sont pas desservies par la CPCA. Le secrétariat a été invité à rédiger le texte des propositions d'amendements et à les communiquer aux pays membres afin que les mesures nécessaires puissent être prises par la CPOI à sa prochaine session, puis par le Comité des pêches et par le Conseil de la FAO. Cependant, comme les implications de cette modification du mandat de la CPOI sur le domaine de compétence de la CIPP n'ont pas été discutées, il a été décidé d'attirer l'attention de la CIPP sur cette question à sa prochaine session.

118. On a rappelé que la CPOI, à sa sixième session, avait aussi demandé au secrétariat d'examiner i) comment la CPOI, dans sa nouvelle structure, devrait adopter et soumettre aux pays membres des recommandations concernant les mesures d'aménagement et quelles en en seraient les incidences sur les statuts de la CPOI, et ii) dans quelles conditions ces recommandations devraient être appliquées par les pays membres, en considérant particulièrement la "procédure d'objection" suivie dans le cas des autres organismes régionaux des pêches. On a noté que la CPOI, avec son régime juridique actuel, ne peut recourir à cette procédure. Une délégation a estimé que l'impossibilité pour la CPOI d'appliquer une procédure d'objection au plan sous-régional constituait une importante lacune dans la structure de cette Commission. On a aussi noté qu'il était possible d'amender les statuts de la CIPP pour introduire cette procédure. Quelques autres pays ont estimé que cette question n'était pas urgente, mais les participants ont décidé que la question de l'adoption de la "procédure d'objection" serait inscrite à l'ordre du jour de la prochaine session de la CIPP.

CONFERENCE MONDIALE DE LA FAO SUR L'AMENAGEMENT ET LE DEVELOPPEMENT DES PECHES

119. Les participants ont examiné ce point de l'ordre du jour à la lumière du document IOFC/IPFC/82/14. Le secrétariat a fourni des renseignements supplémentaires sur les délibérations qui ont déjà eu lieu à ce même sujet lors des cinq conférences régionales de la FAO, y compris la Conférence régionale pour l'Asie et le Pacifique (Jakarta, Indonésie, 1-12 juin 1982), ainsi que sur les mesures déjà prises par la FAO pour s'assurer la coopération des organisations du système des Nations Unies et d'autres organisations internationales.

120. Les participants ont noté avec satisfaction les importantes consultations qui sont en cours avec les gouvernements, au niveau politique et technique. Certaines délégations ont fait observer à ce propos qu'il serait opportun de soumettre l'ordre du jour provisoire de la Conférence à la session estivale de 1983 du Conseil de la FAO. Elles ont aussi noté avec satisfaction la façon dont la Conférence était organisée et les préparatifs détaillés qui sont entrepris.

121. Les participants ont approuvé le mandat proposé pour la Conférence mondiale sur les pêches et ont souscrit à ses objectifs généraux. Ils ont estimé que ses principaux objectifs devraient être les suivants: élaborer des stratégies et des programmes pour assurer l'utilisation optimale des ressources halieutiques, du point de vue économique, social et nutritionnel; accroître la contribution des produits de la pêche à l'autosuffisance alimentaire nationale et à la sécurité alimentaire mondiale; promouvoir l'autosuffisance des pays en développement en matière d'aménagement et de développement des pêches, et encourager la collaboration internationale dans le secteur des pêches entre pays développés et pays en développement, ainsi qu'entre les pays en développement eux-mêmes.

122. Les participants ont noté que les conférence régionales de la FAO avaient estimé que la Conférence mondiale sur les pêches devrait s'occuper en priorité des questions suivantes: a) adoption de politiques nationales et de techniques d'aménagement - ou ajustement des politiques et techniques existantes— y compris réglementation de l'effort de pêche et surveillance et contrôle de la pêche, et élaboration de stratégies de développement tenant compte de l'extension des juridictions nationales sur les pêches maritimes; b) amélioration de la situation socio-économique des pêcheurs artisanaux;

c) encouragement de la coopération dans le secteur des pêches entre les pays développés et les pays en développement, ainsi qu'entre les pays en développement eux-mêmes, et notamment: i) conditions d'accès aux ressources halieutiques des zones économiques exclusives et rôle des co-entreprises et des accords bilatéraux; ii) développement de la collaboration entre les pays d'une même région dans le domaine de la recherche, de l'aménagement, du contrôle et de la surveillance, particulièrement en ce qui concerne les divers types de stocks partagés, et iii) rôle des organismes des pêches régionaux et sous-régionaux de la FAO et soutien technique de ces organismes; d) besoins et problèmes particuliers aux petits pays insulaires en voie de développement; e) problèmes et perspectives des pêches continentales et de l'aquaculture dans les eaux douces, saumâtres et marines; et f) problèmes de transformation, de marketing et de commerce y compris: i) mise en place de systèmes internationaux de commercialisation et de distribution ou amélioration des systèmes existants et ii) développement et rationalisation du commerce international du poisson et des produits de la pêche et participation accrue des pays en développement à ces échanges commerciaux.

123. Dans les débats sur ces questions prioritaires, l'accent a été mis en particulier sur l'application pratique du nouveau régime des océans en ce qui concerne la pêche et spécialement sur la nécessité d'accroître l'autosuffisance des pays en développement, d'améliorer la pêche artisanale et de renforcer le soutien technique dont les comités sous-régionaux ont besoin. En ce qui concerne les accords bilatéraux, plusieurs délégations ont déclaré qu'il serait utile de formuler des directives pour leur négociation et de tenir particulièrement compte des transferts de technologie et des activités de coopération technique qui sont prévus dans nombre de ces accords. D'autres délégations ont fait observer que les accords bilatéraux ont souvent des caractéristiques qui leur sont propres et que l'expérience acquise n'est pas nécessairement applicable ailleurs. On a estimé que plusieurs questions spécifiques méritent d'être examinées, comme la protection du milieu marin, les utilisations multiples des zones côtières, l'exploitation des ressources non traditionnelles et la préservation des mammifères marins.

124. Les participants se sont déclarés entièrement d'accord avec le Directeur général pour estimer que la Conférence mondiale sur les pêches ne devrait pas seulement fournir l'occasion d'échanger des connaissances et des expériences, mais déboucher aussi sur des mesures pratiques et concrètes. Ils ont noté que toutes les conférence régionales de la FAO se sont déclarées favorables à l'élaboration d'une stratégie d'aménagement des pêches au niveau national, sous-régional, régional et mondial et d'un vaste programme de formation basé sur une évaluation attentive des besoins des différents pays et des différents secteurs et tenant compte des structures et moyens existants. L'utilité d'un programme de ce genre a été soulignée. Les participants ont estimé à ce propos qu'il serait nécessaire d'obtenir la participation et le soutien actifs d'organismes de financement ou de donateurs bilatéraux et multilatéraux. Ils ont invité la FAO à poursuivre ses efforts dans ce sens.

AUTRES QUESTIONS

125. Aucune autre question n'a été portée à l'attention de la session conjointe.

COMMISSION DES PECHES POUR L'OCEAN INDIEN (CPOI)

a) Réunions futures proposées

126. La Commission a examiné cette question à la lumière du document IOFC/IPFC/82/12, qui énumère les sessions prévues en 1982-83 au titre du programme ordinaire et avec des fonds extra-budgétaires, ainsi que les réunions proposées pour 1984-85.

127. Elle a pris note des informations fournies et elle a estimé qu'il fallait choisir soigneusement l'époque des sessions afin de les harmoniser avec les préparatifs et la tenue de la Conférence mondiale sur l' aménagement et le développement des pêches.

b) Autres questions

128. M. Labon a transmis à la Commission les remerciements de M. H. Winsor pour le parchemin que la Commission lui a remis à l'occasion de son départ à la retraite, en hommage à son travail comme Directeur du programme pour l'océan Indien.

129. Notant le faible nombre de participants à ses sessions et le fait que celà entrave ses délibérations, surtout lorsque le quorum n'est pas atteint, la Commission a invité le secrétariat à préparer, pour sa prochaine session, un document faisant le point de la participation des membres à ses sessions et à ses activités.

c) Election du bureau

130. En vertu de l'article II-1 de son règlement intérieur, la Commission doit élire à la fin de chaque session un président et six vice-présidents au maximum, qui restent en fonction jusqu'à l'élection du nouveau président et des nouveaux vice-présidents.

131. Les membres suivants ont été élus:

Président	Inde
Premier vice-président	Australie
Autres vice-présidents	Sri Lanka, Kenya, Iran, Indonésie

d) Date et lieu de la huitième session

132. La Commission a remercié la délégation de l'Inde de son offre d'accueillir la huitième session de la CPOI à New Delhi, à la fin de 1984 ou au début de 1985. La date et le lieu exacts de la session seront décidés par le Directeur général, en accord avec le président de la Commission et les autorités du pays hôte.

COMMISSION INDO-PACIFIQUE DES PECHES (CIPP)

a) Réunions futures proposées

133. La Commission a examiné les informations contenues dans le document IOFC/IPFC/82/13. Elle a noté que le secrétariat s'informerait des possibilités de financer une session de la CIPP.

134. Elle a approuvé la proposition tendant à ce que le Comité CIPP pour le développement et l'aménagement des pêches dans la mer de Chine méridionale tienne sa troisième session en Indonésie au milieu de 1983. Elle a aussi approuvé la proposition tendant à ce que le Groupe de travail CIPP des pêches continentales se réunisse en Inde au début de 1984, après la réunion du Groupe de travail CIPP de l'aquaculture. Elle a réaffirmé son désir que le stage d'études pratiques sur la pêche en rivière ait lieu le plus tôt possible.

135. La Commission a remercié l'Indonésie de son offre d'accueillir la quatrième session du SCORRAD.

b) Autres questions

136. La Commission a estimé qu'un thème pour le colloque prévu à l'occasion de la vingt-deuxième session en 1986 pourrait être l'examen des ressources de la région et de leur degré d'exploitation. Les organes subsidiaires ont été invités à examiner cette question et à soumettre un petit nombre de thèmes lors de la vingt-et-unième session par le truchement du SCORRAD.

137. La Commission a décidé que les rapports de ses organes subsidiaires devraient aussi être soumis à la session plénière de la CIPP, quand elle examine le rapport du Comité exécutif.

c) Election du bureau

138. La Malaisie et l'Australie ont été élus à l'unanimité président et vice-président.

139. Les Philippines, l'Inde et les Etats-Unis d'Amérique ont été élus membres du Comité exécutif de la Commission.

d) Date et lieu de la vingt-et-unième session

140. La Commission a remercié la délégation de la Malaisie de son offre d'accueillir la vingt-et-unième session de la CIPP en Malaisie, à la fin de 1984. La date et le lieu exacts de la session seront décidés par le Directeur général en accord avec le président de la Commission et les autorités du pays hôte.

ADOPTION DU RAPPORT

141. La session conjointe a adopté son rapport le 18 novembre 1982. Les parties du rapport concernant d'une part la CPOI et d'autre part la CIPP ont aussi été adoptées par les Commissions respectives, le 18 novembre 1982.

APPENDIX/ANNEXE A

List of Delegates and Observers/Liste des délégués et observateurs

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APPENDIX B

Agenda

1. Opening of the seventh session of IOFC and of the twentieth session of IPFC
2. Procedural arrangements for the joint meeting
3. Adoption of the agenda
4. Indian Ocean Fishery Commission: activities of the subsidiary bodies
   (a) the third and fourth sessions of the IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs
   (b) the first session of the IOFC Committee for the Development and Management of Fisheries in the Southwest Indian Ocean
   (c) the first session of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal
5. Indo-Pacific Fishery Commission: activities of the subsidiary bodies
6. General debate on the situation and prospects of fisheries including country statements
7. Opportunities and needs for regional cooperation
8. Review of regional activities
   (a) Investigation on Indian Ocean and Western Pacific Small Tuna Resources (GCP/RAS/099/JPN)

       Tuna Resources Development and Management in the Indo-Pacific (INT/81/034)
   (b) Network of Aquaculture Centres in Asia (RAS/76/003)
   (c) Marketing Information and Advisory Services for Fish Products in the Asian and Pacific Region (INFOFISH) (GCP/RAS/096/NOR)
   (d) Regional Fisheries Development Programme (South Pacific) (RAS/73/025)
9. Future of Indian Ocean Fishery Commission and Indo-Pacific Fishery Commission
10. FAO World Conference on Fisheries Management and Development
11. Any other matters
12. Indian Ocean Fishery Commission
   (a) proposed future meetings
   (b) any other matters
   (c) election of officers
   (d) date and place of the eighth session
13. Indo-Pacific Fishery Commission
   (a) proposed future meetings
   (b) any other matters
   (c) election of officers
   (d) date and place of the twenty-first session
14. Adoption of the report of the joint meeting

ANNEXE B

Ordre du jour

1. Ouverture de la septième session de la CPOI et de la vingtième session de la CIPP

2. Arrangements pour le déroulement de la session conjointe

3. Adoption de l'ordre du jour

4. Commission des pêches pour l'océan Indien: activités des organes subsidiaires

   a) Troisième et quatrième sessions du Comité CPOI pour le développement et l'aménagement des ressources halieutiques des Golfes

   b) Première session du Comité CPOI pour le développement et l'aménagement des pêches dans le sud-ouest de l'océan Indien

   c) Première session du Comité CPOI pour le développement et l'aménagement des pêches dans le golfe du Bengale

5. Commission indo-pacifique des pêches: activités des organes subsidiaires

6. Débat général sur la situation et les perspectives de la pêche et exposés par pays

7. Possibilités et besoins de coopération régionale

8. Examen des activités régionales

   a) Enquête sur les ressources en petits thons de l'océan Indien et du Pacifique occidental (GCP/RAS/099/JPN)

      Mise en valeur et aménagement des ressources en thons dans la région indo-pacifique (INT/81/034)

   b) Réseau de centres d'aquaculture en Asie (RAS/76/003)

   c) Service d'informations et de conseils sur la commercialisation de poisson dans la région de l'Asie et du Pacifique (INFOFISH) (GCP/RAS/096/NOR)

   d) Programme régional de développement de la pêche (Pacifique Sud) (RAS/73/025)

9. Avenir de la Commission des pêches pour l'océan Indien et de la Commission indo-pacifique des pêches

10. Conférence mondiale de la FAO sur l'aménagement et le développement des pêches

11. Autres questions

12. Commission des pêches pour l'océan Indien

   a) Réunions futures proposées

   b) Autres questions

   c) Election du bureau

   d) Date et lieu de la huitième session

13. Commission indo-pacifique des pêches

    a) Réunions futures envisagées

    b) Autres questions

    c) Election du bureau

    d) Date et lieu de la vingt-et-unième session

14. Adoption du rapport de la session conjointe

APPENDIX C

List of Documents

IOFC/IPFC/82/1	Annotated provisional agenda and timetable
2	Future of IOFC and IPFC
3	Opportunities and needs for regional cooperation in the IOFC/IPFC region
4	Management of shared stocks
5	Existing and proposed regional and interregional technical assistance programmes
6	Report of the fifty-ninth session of the IPFC Executive Committee (Bangkok, Thailand, 21-22 December 1981)
7	Report of the sixtieth session of the IPFC Executive Committee (Bali, Indonesia, 10 November 1982)
8	Report of the third session of the IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs (Doha, Qatar, 28-30 September 1980)
9	Report of the fourth session of the IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs (Doha, Qatar, 19-21 April 1982)
10	Report of the first session of the IOFC Committee for the Development and Management of Fisheries in the Southwest Indian Ocean (Le Chaland, Mauritius, 22-24 April 1981)
11	Report of the first session of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal (Colombo, Sri Lanka, 7-9 December 1981)
12	Proposed FAO fisheries sessions in the IOFC region
13	Proposed FAO fisheries session in the IPFC region
14	FAO World Conference on Fisheries Management and Development
IOFC/IPFC/82/Inf.1	List of documents
2	Information for participants
3	List of delegates and observers
4	Report of the IPFC Workshop on Inland Fisheries for Planners (Manila, Philippines, 2-6 August 1982)
5	Strategy for shrimp by-catch utilization - summary of conclusions and recommendations emanating grom the Technical Consultation on Shrimp By-catch Utilization (Georgetown, Guyana, 27-30 October 1981)
6	Some problems of the management of shared stocks

ANNEXE C

Liste des documents

IOFC/IPFC/82/1	Ordre du jour provisoire annoté et calendrier
2	Avenir de la CPOI et de la CIPP
3	Possibilités et nécessités d'une coopération régionale dans la région CPOI/CIPP
4	Aménagement des stocks partagés
5	Programmes régionaux et interrégionaux d'assistance technique existants et proposés
6	Rapport de la 59ème session du Comité exécutif de la CIPP (Bangkok, Thaïlande, 21-22 décembre 1981)
7	Rapport de la 60ème session du Comité exécutif de la CIPP (Bali, Indonésie, 10 novembre 1982)
8	Rapport de la troisième session du Comité CPOI du développement et de l'aménagement des ressources halieutiques des golfes (Doha, Qatar, 28-30 septembre 1980)
9	Rapport de la quatrième session du Comité CPOI du développement et de l'aménagement des ressources halieutiques des golfes (Doha, Qatar, 19-21 avril 1982)
10	Rapport de la première session du Comité CPOI du développement et de l'aménagement des pêches dans le sud-ouest de l'océan Indien (Le Chaland, Maurice, 22-24 avril 1981)
11	Rapport de la première session du Comité CPOI du développement et de l'aménagement des pêches dans le golfe du Bengale (Colombo, Sri Lanka, 7-9 décembre 1981)
12	Réunions de la FAO sur les pêches prévues dans la région de la CPOI
13	Réunions de la FAO sur les pêches prévues dans la région de la CIPP
14	Conférence mondiale de la FAO sur l'aménagement et le développement des pêches
IOFC/IPFC/82/Inf.1	Liste des documents
2	Information à l'usage des participants
3	Liste des délégués et observateurs
4	Rapport de la session d'étude de la CIPP sur les pêches intérieures, à l'intention des planificateurs (Manille, Philippines, 2-6 août 1982)
5	Stratégie concernant l'utilisation des captures accessoires des pêcheries de crevettes - Résumé des conclusions et recommandations du Comité technique sur l'utilisation des captures accessoires des pêcheries de crevettes (Georgetown, Guyane, 27-30 octobre 1981)
6	Certains problèmes que pose l'aménagement des stocks partagés

APPENDIX D

Summary of Major Decisions and Recommendations for Action

	Paragraphs
Item 4 - Indian Ocean Fishery Commission: activities of the subsidiary bodies	
(a) IOFC Committee for the Development and Management of the Fishery Resources of the Gulfs	
For attention of FAO	
1. Reports and recommendations of the third and fourth sessions of the Committee were endorsed.	11
2. Countries should be assisted in fish handling and marketing in order to increase available food.	20
For attention of Governments	
1. Recommendations of the third and fourth sessions of the Committee were endorsed.	11
2. Countries should place greater emphasis on fish handling and marketing in order to increase available food.	20
(b) IOFC Committee for the Development and Management of Fisheries in the Southwest Indian Ocean	
For attention of FAO	
1. The report of the first session and its recommendations were endorsed.	24
2. Draw attention of members to the special provisions made in the law of the sea concerning the particular nature of the management of migratory stocks, particularly tunas.	25
For attention of Governments	
1. Report and recommendations of the first session were endorsed.	24
2. Note the special provisions of the law of the sea concerning the management of migratory stocks, particularly tunas.	25
(c) IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal	
For attention of FAO	
1. Provide adequate secretariat for the Committee.	29
2. Location of Headquarters and activities of project GCP/RAS/040/SWE "Development of Small-Scale Fisheries in the Bay of Bengal:	
- The Headquarters of the project to remain in Madras until the termination of the project.	30
- Fishing craft development to be located in Sri Lanka while work essential for India will continue in India.	30
- The new international staff (i.e. fishery technologists and aquaculturists) will be located in Colombo, Sri Lanka.	30

		Paragraphs
3.	To encourage Burma to join IOFC.	30
4.	To initiate enquiries and to provide information on fishery development programmes in the Indian Ocean and in the Indo-Pacific area executed directly by bilateral donors.	31
5.	To prepare documentation for a future session on management measures implemented in other parts of the world.	32
6.	Report of the first session of the Committee and of the special session were approved.	33

For attention of Governments

1.	Location of Headquarters and activities of GCP/RAS/040/SWE.	30

Item 5 - Indo-Pacific Fishery Commission: activities of the subsidiary bodies

For attention of FAO

1.	The Working Parties on Aquaculture and on Inland Fisheries to meet early in 1984.	35
2.	To ensure participation of landlocked States in workshops on inland fisheries.	35
3.	To make available reports of EEZ missions.	37
4.	To provide secretariat for the IPFC Committee for the Development and Management of Fisheries in the South China Sea.	38
5.	To hold a symposium in conjunction with the twenty-second session of IPFC.	45
6.	To provide technical assistance in the training of tuna fishing techniques.	43

For attention of Governments

1.	To provide technical clearance and permission for distribution of reports resulting from FAO's EEZ missions.	37
2.	To improve communication between scientists and administrators.	39
3.	To encourage participation of technologists and economists in future meetings of SCORRAD.	41

Item 8 - Review of regional activities

(a) Investigation on Indian Ocean and Western Pacific Small Tuna Resources (GCP/RAS/099/JPN)

Tuna Resources Development and Management in the Indo-Pacific (INT/81/034)

For attention of Governments

1.	National delegations to regional UNDP meetings should make more efforts to secure funding for fishery projects.	49
2.	Countries should appoint national correspondents to liaise with the project.	50

Paragraphs

(b) Network of Aquaculture Centres in Asia (RAS/76/003)

For attention of FAO

1. The work of the network should be expanded to include other topics e.g. reservoir fisheries, improvement of fish seed production, aquaculture in irrigated ponds and fish diseases and parasites. 53

For attention of Governments

1. Countries cautioned that since area available for aquaculture is limited, aquaculture could not be expected to replace but only supplement protein production from capture fisheries. 54

2. Offer by Unesco to fund study tours to aquaculture centres. 55

(c) Marketing Information and Advisory Services for Fish Products in the Asian and Pacific Region (INFOFISH) (GCP/RAS/096/NOR)

For attention to FAO

1. Caution and strict editorial control as to authorship and content of articles reporting on the fish marketing situation in member countries. 57

2. Identification of project collaboration with other organizations working in related fields. 57

3. Widen membership of countries participating in the project. 57

4. Broader activities of project including participation in trade fairs, training courses in fish handling, processing, diversified fish product marketing, harmonization of fish product standards and inspection methods and provision of information on shipping schedules and impact of project activities on exports from the small-scale fisheries sector. 57

5. Seek continued financial support for the services after termination of present donor support. 58

Item 7 - Opportunities and needs for regional cooperation

For attention of FAO

1. Regional bodies to play important roles in the preliminary stages of reviewing the nature of the sharing of the stocks and assessing the state of exploitation prior to deciding on specific management actions. 96

2. Strengthen both the sub-regional committees and the various technical support units. 99

3. Secretariat maintain a register of training institutions in member countries which could be matched to requests for training. 100

4. Increase and intensify support of the work of IPFC Working Party on Fish Technology and Marketing. 104

5. Identify priority areas for possible future resource surveys, examine on a sub-regional and regional basis development prospects of mariculture, inland fisheries, methods of assessing fish resources within national EEZs, the design of fishing vessels and gears appropriate to the conditions of local communities and the implementation of pilot management schemes. 105

		Paragraphs
6.	Cosponsor the IOC global programme of ocean science in relation to living resources.	109

For attention of Governments

1.	Exchange of information between neighbouring countries concerning foreign vessels infringing national regulations.	103

Item 9 - Future of Indian Ocean Fishery Commission and Indo-Pacific Fishery Commission

For attention of FAO

1.	Strengthen sub-regional committees serving natural management areas.	112
2.	Commissions should continue (a) to play a dominant role in matters of relevance to their areas of competence as a whole or of interest to all their member countries; (b) to coordinate between the various sub-regional committees; (c) to handle issues of interest to several sub-regional committees or of direct concern to member countries which are not bordering on sea area within the competence of existing sub-regional committees.	112
3.	Interval between sessions of the Commissions should be two years.	112
4.	Existing arrangements concerning the area of competence of IOFC and IPFC are satisfactory.	113
5.	Possibility of merging IOFC and IPFC in a single body should be considered at future sessions of IOFC and IPFC.	114
6.	The convening of joint meetings of the Commissions to be resorted to only if problems of common interest were to be discussed.	114
7.	Retention of IPFC Executive Committee to be reviewed later on and the basis of the actual functioning of the subsidiary bodies.	115
8.	To amend the statutes of IOFC to include inland fisheries and aquaculture.	116
9.	Bring to the attention of IPFC the proposed amendments to the statutes of IOFC.	116
10.	Include in the agenda of the next session of IPFC an item concerning the adoption of the "objection procedure" by the Commissions.	117

Item 10 - FAO World Conference on Fisheries Management and Development

For attention of FAO

1.	Place the draft agenda for the Conference before the summer 1983 session of the FAO Council.	119
2.	Endorsement of the proposed scope and broad objectives of the Conference.	120
3.	Placing emphasis on the practical implementation of the new regime of the oceans in respect of fisheries.	122
4.	Conference should lead to practical and concrete outcomes.	123
5.	Elicit an active participation and support of bilateral and multilateral donor or financing agencies.	123

Paragraphes

Item 12 - Indian Ocean Fishery Commission

(a) Proposed future meetings

For attention of FAO

1. Timing of the sessions should be harmonized with the preparations for and the holding of the World Conference on Fisheries Management and Development. 126

(b) Any other matters

1. Prepare a document for its next session reviewing the members attendance to the sessions and their participation in its activities. 128

(c) Election of officers

The following members were elected: 130

Chairman	India
First Vice-Chairman	Australia
Other Vice-Chairmen	Sri Lanka
	Kenya
	Iran
	Indonesia

d) Date and place of the eighth session

India offered to host the next session. 131

Item 13 - Indo-Pacific Fishery Commission

(a) Proposed future meetings

For attention of FAO

1. Investigate possibility of holding an inter-sessional session of IPFC Executive Committee. 132

2. Third session of the IPFC Committee for the Development and Management of Fisheries in the South China Sea should be held in Indonesia in mid-1983. 133

3. IPFC Working Party on Inland Fisheries and IPFC Working Party on Aquaculture should be held consecutively in India early in 1984. 133

4. Investigate possibility of holding the Workshop on Riverine Fisheries. 133

5. Indonesia offered to host the fourth session of SCORRAD. 134

(b) Any other matters

1. One proposed subject for symposium to be held in conjunction with the twenty-second session of IPFC might be a review of the resources of the region and their state of exploitation. Subsidiary bodies of IPFC should be requested to present other subject options. 135

2. Reports of the IPFC subsidiary bodies should also be submitted to the plenary session of IPFC when discussing the IPFC Executive Committee reports. 136

Paragraph

(c) Election of officers

Chairman	Malaysia
Vice-Chairman	Australia
Other members of the Executive Committee	Philippines
	India
	United States of America

(d) Date and place of the twenty-first session

Malaysia offered to host the next session of IPFC. 139

ANNEXE D

Résumé des principales décisions et recommandations

	Paragraphes
Point 4 - Commission des pêches pour l'océan Indien: activités des organes subsidiaires	
a) **Comité pour le développement et l'aménagement des ressources halieutiques des Golfes**	
A l'attention de la FAO	
1. Les rapports et les recommandations des troisième et quatrième sessions du Comité ont été approuvés.	11
2. Il faudrait aider les pays à améliorer la manutention et la commercialisation du poisson afin d'accroître leurs disponibilités alimentaires.	20
A l'attention des gouvernements	
1. Les recommandations des troisième et quatrième sessions du Comité ont été approuvées.	11
2. Les pays devraient mettre davantage l'accent sur la manutention et la commercialisation du poisson afin d'accroître leurs disponibilités alimentaires.	20
b) **Comité pour le développement et l'aménagement des pêches dans le sud-ouest de l'océan Indien**	
A l'attention de la FAO	
1. Le rapport et les recommandations de la première session ont été approuvés.	24
2. Attirer l'attention des membres sur les dispositions spéciales de la Convention sur le droit de la mer concernant la nature particulière de l'aménagement des stocks migrateurs, en particulier des thonidés.	25
A l'attention des gouvernements	
1. Le rapport et les recommandations de la première session ont été approuvés.	24
2. Noter les dispositions spéciales de la Convention sur le droit de la mer concernant l'aménagement des stocks migrateurs, notamment des thonidés.	25
c) **Comité pour le développement et l'aménagement des pêches dans le golfe du Bengale**	
A l'attention de la FAO	
1. Fournir un secrétariat adéquat au Comité.	29
2. Siège et activités du projet GCP/RAS/040/SWE "Développement de la pêche artisanale dans le golfe du Bengale":	
- Le siège restera à Madras jusqu'à la fin du projet	30

- La mise au point de modèles de bateaux de pêche se fera au Sri Lanka tandis que les activités qui présentent un intérêt essentiel pour l'Inde continueront à être menées dans ce dernier pays. 30

- Le nouveau personnel international (technologistes des pêches et spécialistes de l'aquaculture) sera installé à Colombo, au Sri Lanka. 30

3. Inciter la Birmanie à adhérer au CPOI. 30

4. Entreprendre des démarches et fournir des informations sur les programmes de développement des pêches dans l'océan Indien et la zone indo-pacifique qui sont exécutés directement par des donateurs bilatéraux. 31

5. Préparer pour une prochaine session un document d'information sur les mesures d'aménagement appliquées dans d'autres parties du monde. 32

6. Le rapport de la première session et de la session spéciale du Comité ont été approuvés. 33

A l'attention des gouvernements

1. Siège et activités du projet GCP/RAS/040/SWE. 30

Point 5 - Commission Indo-pacifique des pêches: activités des organes subsidiaires

A l'attention de la FAO

1. Les groupes de travail de l'aquaculture et des pêches intérieures se réuniront au début de 1984. 35

2. Obtenir la participation des pays sans littoral aux stages d'études pratiques sur les pêches intérieures. 35

3. Rendre disponibles les rapports des missions concernant les ZEE. 37

4. Fournir un secrétariat au Comité de la CIPP pour le développement et l'aménagement des pêches dans la mer de Chine méridionale. 38

5. Organiser un colloque à l'occasion de la vingt-deuxième session de la CIPP. 45

6. Fournir une assistance technique pour la formation aux méthodes de pêche au thon. 43

A l'attention des gouvernements

1. Donner leur approbation technique aux rapports des missions de la FAO concernant les ZEE et autoriser leur diffusion. 37

2. Améliorer les communications entre spécialistes et administrateurs. 39

3. Encourager la participation de technologistes et d'économistes aux futures réunions du SCORRAD. 41

Point 8 - Examen des activités régionales

a) Enquête sur les ressources en petits thons de l'océan Indien et du Pacifique occidental (GCP/RAS/099/JPN)

Mise en valeur et aménagement des ressources en thon dans la région indo-pacifique (INT/81/034)

A l'attention des gouvernements

1. Les délégations nationales participant aux réunions régionales du PNUD devraient s'efforcer davantage d'obtenir des moyens financiers pour les projets halieutiques. 49

2. Les pays devraient nommer des correspondants nationaux qui assureront la liaison avec le projet. 50

b) Réseau de centres d'aquaculture en Asie (RAS/76/003)

A l'attention de la FAO

1. Il faudrait élargir le champ d'activité de ce réseau pour y inclure, par exemple, la pêche en réservoir, l'amélioration de la production d'oeufs de poisson, l'aquaculture en étangs irrigués et les maladies et parasites des poissons. 53

A l'attention des gouvernements

1. Les superficies disponibles pour l'aquaculture sont limitées et les pays doivent être conscients que l'aquaculture ne peut donc pas remplacer la pêche de capture comme source d'aliments protéiques mais uniquement la compléter. 54

2. Offre par l'Unesco de financer des voyages d'étude pour visiter les centres d'aquaculture. 55

c) Services d'information et de conseils sur la commercialisation du poisson dans la région de l'Asie et du Pacifique (INFOFISH) (GCP/RAS/096/NOR)

A l'attention de la FAO

1. On a recommandé que la rédaction des publications contrôle soigneusement les auteurs et le contenu des articles décrivant la situation de la commercialisation du poisson dans les pays membres. 57

2. Resserrer les liens du projet avec d'autres organisations opérant dans des domaines voisins. 57

3. Amener d'autres pays à participer au projet. 57

4. Elargir le champ d'activité du projet, notamment: participation à des foires commerciales, cours de formation en matière de manutention et de transformation du poisson et de commercialisation de produits diversifiés de la pêche, harmonisation des normes relatives aux produits de la pêche et des méthodes d'inspection, informations sur les tarifs des transports maritimes et sur l'impact des activités du projet sur les exportations du secteur de la pêche artisanale. 57

5. Chercher des concours financiers pour que ces services continuent quand l'aide des donateurs actuels aura pris fin. 58

Point 7 - Possibilités et besoins de coopération régionale

A l'attention de la FAO

1. Les organismes régionaux ont un rôle important à jouer aux stades préliminaires qui consistent à examiner la nature du partage des stocks et à évaluer leur degré d'exploitation avant de décider de mesures d'aménagement spécifiques. 96

2. Renforcer les comités sous-régionaux et les diverses unités de soutien technique. 99

3. Le Secrétariat devrait établir un répertoire des institutions de formation des pays membres susceptibles de répondre aux demandes de formation. 100

4. Renforcer et soutenir plus vigoureusement les activités du Groupe de travail de la CIPP sur la technologie et la commercialisation du poisson. 104

5. Déterminer les zones prioritaires pour d'éventuelles prospections futures des ressources, examiner aux niveaux sous-régional et régional les possibilités de développement de la mariculture, la situation de la pêche intérieure, les méthodes d'évaluation des ressources halieutiques des ZEE nationales, la construction de bateaux et la mise au point d'engins de pêche adaptés aux exigences des communautés locales et l'application de programmes pilotes d'aménagement. 105

6. Coparrainer le programme mondial de la COI sur la science océanique dans ses rapports avec les ressources biologiques. 109

A l'attention des gouvernements

1. Echange d'informations entre pays voisins sur les bateaux étrangers qui ne respectent pas la réglementation nationale. 103

Point 9 - Avenir de la Commission des pêches pour l'océan Indien et de la Commission Indo-pacifique des pêches

A l'attention de la FAO

1. Renforcer les comités sous-régionaux desservant des aires d'aménagement naturelles. 112

2. Les Commissions devraient continuer (a) à jouer un rôle dominant dans les questions qui relèvent de leur compétence générale ou qui intéressent tous leurs pays membres; (b) à assurer la coordination entre les divers comités sous-régionaux; c) à examiner les questions qui intéressent plusieurs comités sous-régionaux ou qui intéressent directement des pays membres qui n'ont pas de façade maritime sur les eaux relevant de la compétence des comités sous-régionaux existants. 112

3. L'intervalle entre les sessions des Commissions devrait être de deux ans. 112

4. Les arrangements concernant les domaines de compétence de la CPOI et de la CIPP sont satisfaisants. 113

5. La possibilité de fusionner en un seul organisme la CPOI et la CIPP devrait être examinée à de futures sessions de ces deux commissions. 114

6. Des réunions conjointes des deux commissions ne devraient être convoquées que lorsque des problèmes d'intérêt commun doivent être examinés. 114

7. Le maintien du Comité exécutif de la CIPP devrait être réexaminé ultérieurement à la lumière du fonctionnement effectif des organes subsidiaires. 115

8. Amender les statuts de la CPOI pour inclure dans son mandat les pêches continentales et l'aquaculture. 116

9. Attirer l'attention de la CIPP sur les modifications qu'il est proposé d'apporter aux statuts de la CPOI. 116

10. Inscrire à l'ordre du jour de la prochaine session de la CIPP la question de l'adoption de la "procédure d'objection" par les commissions. 117

Point 10 - Conférence mondiale de la FAO sur l'aménagement et le développement des pêches

A l'attention de la FAO

1. Le projet d'ordre du jour de la Conférence devrait être présenté à la session du Conseil de la FAO de l'été 1983. 119

2. Approbation du mandat proposé pour la Conférence et de ses objectifs généraux. 120

3. Mettre l'accent sur l'application pratique du nouveau régime des océans en ce qui concerne la pêche. 122

4. La Conférence devrait déboucher sur des mesures pratiques et concrètes. 123

5. Obtenir la participation et le soutien actifs d'organismes de financement ou de donateurs bilatéraux et multilatéraux. 123

Point 12 - Commission des pêches pour l'océan Indien

a) Réunions futures proposées

A l'attention de la FAO

1. Le calendrier des sessions doit être harmonisé avec la préparation et la tenue de la Conférence mondiale sur l'aménagement et le développement des pêches. 126

b) Autres questions

1. Préparer pour la prochaine session de la Commission un document faisant le point de la participation des membres à ses sessions et à ses activités. 128

c) Election du bureau

Les membres suivants ont été élus: 130

Président	Inde
1er Vice-président	Australie
Autres vice-présidents	Sri Lanka
	Kenya
	Iran
	Indonésie

d) Date et lieu de la huitième session

L'Inde a offert d'accueillir la prochaine session. 131

Point 13 - Commission Indo-pacifique des pêches

a) Réunions futures proposées

A l'attention de la FAO

1. Examiner la possibilité d'organiser une réunion du Comité exécutif de la CIPP entre deux sessions. 132

2. La troisième session du Comité CIPP pour le développement et l'aménagement des pêches dans la mer de Chine méridionale devrait se tenir en Indonésie au milieu de 1983. 133

3. Le Groupe de travail CIPP des pêches continentales et le Groupe de travail CIPP de l'aquaculture devraient se réunir l'un à la suite de l'autre en Inde au début de 1984. 133

4. Examiner la possibilité d'organiser un stage d'études pratiques sur la pêche en rivière. 133

5. L'Indonésie a offert d'accueillir la quatrième session du SCORRAD. 134

b) Autres questions

1. Le colloque qui doit être organisé à l'occasion de la vingt-deuxième session de la CIPP pourrait notamment examiner les ressources de la région et leur degré d'exploitation. Il faudrait demander aux organes subsidiaires de la CIPP de proposer d'autres sujets d'étude. 135

2. Les rapports des organes subsidiaires de la CIPP devraient aussi être soumis à la session plénière de la CIPP quand celle-ci examine les rapports du Comité exécutif. 136

c. Election du bureau

Président	Malaisie	138
Vice-président	Australie	
Autres membres du Comité exécutif	Philippines	
	Inde	
	Etats-Unis d'Amérique	

d) Date et lieu de la vingt-et-unième session

La Malaisie a offert d'accueillir la prochaine session de la CIPP. 139

APPENDIX/ANNEXE E

Country Statement: Australia

1. AN OVERVIEW OF THE AUSTRALIAN FISHING INDUSTRY

1.1 Australian Fishing Industry

There are about 9 000 commercial fishing vessels in Australia with a capital investment of close to A.$ 500 million. Most of these vessels are relatively small; 70% are less than 9 m and only 2% are more than 21 m.

In the processing sector there are 160 registered land-based processing plants. Again, most are small - 80% have an annual throughput of less than 1 000 t and they employ predominantly casual labor. About 70% are located in rural areas.

Australian fisheries production in the year to June 1981 reached an estimated 149 000 t, compared with 118 000 t ten years ago. The value of the catch in 1980-81 was about A.$ 350 million (US$ 93 million in 1970-71); ranking behind the major rural industries such as wheat, beef, wool and dairying but ahead of most of the other cropping and livestock activities and accounting for about 3% of the gross value of rural output.

Such figures, however, tend to underestimate the important role played by the industry in the economy, especially as a source of employment in coastal areas. It is estimated that the industry provides employment for some 18 000 fishermen and further 4 000-5 000 in the processing and wholesaling sector. The fishing industry is the main source of economic activity for many towns along the coast.

Although the gross value of fisheries production is overshadowed by the major rural products, a feature of the industry over the past decade has been its consistently high rate of growth. For example, in the ten years to 1981-82 the gross value of Australian rural output grew by just over 9% annually, compared with a 13.4% growth by the fishing industry. Although this growth has been largely spurred on by higher prices, the volume of catch has also risen by some 2% annually.

From a trade viewpoint, the Australian industry is very much involved in world seafood markets. About two-thirds of the Australian catch, in value terms, is exported, while about half domestic consumption of seafood is supplied by imports.

High value crustaceans and molluscs form the major components of the export trade with the total value of fish and fish product exports amounting to US$ 325 million in 1981-82. These are sold largely in Japan and the United States in competition with other international and domestic supplies to these markets.

Nearly all the finfish caught by Australian fishermen is consumed domestically in fresh or canned form. However, there is a considerable gap between the Australian catch and domestic requirements and imports were valued at US$ 220 million in 1981-82. Import barriers are low or non-existent for seafood products.

1.2 Australian Fishing Zone (AFZ)

On 1 November 1979, Australia extended its fisheries jurisdiction to 200 miles in accordance with developing international law and since then access of foreign fishing vessels to the 200 mile Australian fishing zone has been strictly controlled with a view to protecting the interests of the Australian fishing industry while meeting our international obligations to allow foreign vessels access to surplus resources.

1.3 Productivity of Australian Waters

Australia has one of the longest coastlines of any country and consequently one of the largest fisheries zones in the world. Yet our current annual output of 149 000 t represents a small fraction, less than 0.002%, of total world production. Reasons for

this low output are related to biological limitations on productivity and the history of European patterns of settlement in Australia with its concentration on terrestrial agricultural primary production.

Australia is a very old, weathered and arid continent and the soils are deficient in phosphorus and nitrogen. There is thus very low terrestrial discharge of these nutrients into the coastal waters. Upwellings, which in other parts of the world contribute nutrients to support large single species fisheries and large scale fishery production, are limited in Australian coastal waters to sporadic localized coastal occurrences and a biological enrichment process in northwestern waters which is little understood.

The low nutrient status exacerbates the other major biological limitation affecting fishery production in Australia, namely its location predominantly in tropical and subtropical seas which are characterized by a marine fauna of high species diversity, but limited individual numbers.

Thus, while there are some 3 000 known species of fish and at least an equal number of crustacean and mollusc species inhabiting Australian waters, less than 200 of these are commercially exploited.

1.4 Major Fishing Areas

As a result of these biological conditions, together with the cultural and socio-economic influences the Australian fishing industry has historically been a small scale, nearshore occupation, generally near centres of relatively high population density. Urban settlement in Australia is concentrated in the southeastern quadrant of the continent and hence much of the fishing is located in the waters of the south east, particularly in relation to trawl fisheries which are the principal supplies of fresh fish to the domestic finfish market.

There are notable exceptions to this situation, however, and fishing production statistics appearing at Appendix A show that high unit value species such as prawns and rock lobster which contribute over half the value of the total catch (60%) are taken predominantly in northern and western waters respectively. However, with the exception of these two sectors of the fishing industry, there has been more concentration by Australians on the resources of southeastern Australia than on those in the more remote regions. Foreign fishing activity has dominated the demersal trawl and pelagic fisheries off northern Australia and has been a major component of the tuna fisheries.

The growth in Australia's fisheries production since the proclamation of the AFZ has largely taken place in traditional fisheries. However, as a consequence of the increase in fishing effort, the industry is facing increasing biological and economic constraints in these fisheries. Expansion in the more remote areas tends to be restrained by a range of economic and marketing factors.

2. OBJECTIVES OF GOVERNMENT POLICY

In recent years and especially since the Australian 200 mile fishing zone was declared in November 1979, a range of policies designed to provide Australians with increased opportunities to exploit our fisheries resources have been developed. There has been increased funding for research and development activities. Also considerable information has been gathered from feasibility fishing operations conducted by Australian and foreign firms and from observation of foreign fishing activities generally. Foreign fishing has been progressively restricted to allow for an expansion of Australian fishing.

While a great deal of information has been obtained about the fisheries resources around Australia our knowledge of the size of the resources and the degree of exploitation they can stand is still far from complete. Accordingly, there is a major, continuing programme of exploitation and research.

There are still many avenues for further development of the Australian fishing industry These include the deep water trawl resources and southern waters and the extensive fisheries to the north and north west of Australia. Where the Australian industry does not have the capacity to harvest the resources, Government generally supports the conduct of joint feasibility fishing projects or the establishment of longer term commercial joint ventures. Government and industry have a preference for joint ventures over bilateral fishing agreements which do not have a programme of Australianization, but bilateral agreements are approved in some circumstances.

With regard to management, proposals for new or changed arrangements are under consideration for a number of important fisheries. A national enquiry is also being conducted into the adjustment needs of the fishing industry. The review of management and adjustment needs is aimed at giving the industry maximum opportunity to adjust and adopt the most efficient and profitable practices while still protecting the basic resource.

Australia's policies also recognize the need to cooperate with other nations in the management and development of fisheries resources. For example, agreement has been reached with Papua New Guinea which includes arrangements for the joint management of the fisheries of the Torres Strait. Australia also expects to hold discussions with Indonesia on Management of the fisheries of the Arafura and Timor Seas where the same stocks straddle our respective fisheries zones. In addition, we will be shortly entering negotiations with Japan and New Zealand concerning the international management of southern bluefin tuna. The three nations involved have a major interest in the careful management of this resource.

Finally, Australia has joined with other members of the South Pacific Forum in establishing the Forum Fisheries Agency (FFA). While the FFA is not involved directly in management of fisheries of the region, it is making considerable progress in the coordination of fisheries policies and especially policies with respect to access by distant water fishermen to tuna resources. The FFA is also providing direct assistance to member countries and particularly the smaller island States which require assistance in managing their 200 mile zones. Australia is providing one-third of the funding of the FFA as well as further assistance for particular projects.

3. SITUATION IN AUSTRALIA'S MAJOR FISHERIES

3.1 Major Traditional Fisheries

(a) Prawns: Production from prawn fisheries in Australia in 1981 comprised 27 000 t of the total Australian fisheries production of 149 000 t. In value terms this represents 36% of the total Australian fish catch and 39% of the value of our export trade.

The prawn fishery in northern Australia accounts for approximately 50% of total prawn production. It is based on three major species groups, namely banana prawns (*P. merguinensis*), tiger prawns (*P. esculentus*) and endeavour prawns (*Metapennaeus endeavouri* and *M. ensis*). Other species are also taken.

The banana prawn fishery is considered to be fully exploited (3 000-5 000 t annually). The main banana fishery in the south east Gulf of Carpentaria is characterized by very heavy exploitation rates and a progressively shortening season as larger and more powerful fishing vessels enter the fishery and take the majority of the catch in a very short period. Scientists have sounded a note of caution about the possibility of effects of recruitment by over-fishing in the future.

The tiger/endeavour fishery has also been subject to increasing levels of fishing effort in recent years and is now the dominant fishery in terms of quantity taken (8 000 t, 1981-82). The catch has not been rising in proportion to the effort; it is not known if further increases in effort will result in a greater catch.

(b) Western rock lobster fishery: The western rock lobster fishery (*Penulirus longipes cygrus*) is Australia's second most valuable single fishery. It accounts for 8% of Australia's 1981 fisheries production (10 000 t) and US$ 57 M (i.e., 16% in value) and 25% of the value of our exports. It is being subjected to increasing fishing pressure and a range of limitations exist to control effort on the resource. Scientists are concerned that technological changes have allowed better directed fishing, so that although the number of pots in the fishery is unchanged, efficiency has increased. To compensate, some reduction in pot numbers will probably be required.

(c) Shark: The southeastern shark fishery is based primarily on the exploitation of school shark (*Galeorthines australis*) and gummy shark (*Mustelus antarcticus*) and the catch is exclusively sold on the domestic market. Some 7 500 t were caught in 1981-82 representing in value terms 4% of total Australian production.

Research has shown that there is cause for concern about the level of fishing effort on these species and effort may need to be contained.

(d) South east trawl: The south east trawl fishery is the principal source of Australian-caught fish from major metropolitan markets. It also supplies a significant quantity of fish for processing and some for export.

The 1980-81 catch from the fishery was in the vicinity of 17 000 t. Estimates of the sustainable yield range as high as 30 000-35 000 t from the main sector in the fishery. Nine species groups make up the major component of the catch and while some are considered to be underexploited, others may be subject to excessive fishing effort. Management of the fishery is complicated by its multispecies nature and the fact that some areas are fully exploited and vessel numbers are excessive, whereas other areas, particularly offshore waters, are underexploited. New management arrangements for the fishery are currently being developed.

(e) Southern bluefin tuna: The sourthern bluefin tuna (*Thunnus maccoyii*) fishery is exploited largely by the Australian and Japanese fishing industries. The Australian fleet focusses on the younger schooling age fish while the Japanese tend to take the older age groups. The catch is sold largely to domestic canneries although some 20% of the catch was exported whole in recent years. The Australian catch has increased significantly in recent years from 11 500 t in 1977-78 to over 21 000 t in 1981-82. The Japanese catch on the other hand has declined from 4 000-5 000 t to 2 000-2 500 t in the AFZ; however, it has remained steady overall. Scientists have warned that the present level of effort is reducing the number of spawning adults and that the nations involved need to adopt more restrictive management practices. Discussions will be held with Japan and New Zealand on the State of the stock and mechanisms for management to 1982-83.

3.2 Scope for Expansion into other Fisheries

(a) Northern demersal trawn and pelagic resources: Prior to the declaration of the Australian fishing zone in 1979, the Taiwanese were reportedly catching about 70 000 t of demersal and pelagic fish in this area. The region is now largely fished by Taiwanese under a bilateral agreement which permits annual catches of 20 000 t of demersal fish and 7 000 t of pelagic species.

The demersal catch comprises a predominance of low unit value small species more favoured on Asian than Australian markets.

Most of the catch is likely to continue to be exported in the near future. The Government is, however, commencing a major research programme to review the biological and economic aspects of the exploitation of the these trawl resources.

The northern pelagic species (tuna, shark and mackerel) are assessed, on the limited data available to be close to full exploitation (especially shark) by the current foreign fishery. Any significant development by Australian industry will be at the expense of the allowed foreign catch. Australian development of these species will depend very much on cost and marketing consideration. The Australian Government is currently examining a number of joint venture proposals aimed at increasing Australian participation in these fisheries.

(b) Northern tuna: The Coral Sea tuna (*yellowfin, bigeye*) handline fishery operated by Japanese and more recently Australian fishermen, currently produces approximately 600 t a year during a very short season in October and November.

(c) Squid: Squid (*Nototodarus gouldi*) resources of south-east Australian waters offer a significant opportunity for expansion and development. Japanese fishermen caught some 8 000 t in 1979-80 during a feasibility fishing programme in partnership with Australians. In 1980-81 the depressed world market for squid in Japan reduced interest in and development of the squid fishery. The Government is, however, currently examining foreign proposals to develop this resource.

(d) Western Pacific Ocean skipjack tuna: Skipjack tuna (*Katsuomis pelamis*) resources offer a major opportunity for fishery expansion. Estimates of the standing stock of this region range as high as 10 million tonnes, with a monthly turnover of 20%. Part of this fishery (estimated 50 000 t) occurs in Australian waters.

(e) Southern pelagic: The existence of some 40 000-70 000 t of jack mackerel (*Trachurus declivis*) some anchovies and pilchards, have been known for some time. However, Australian interest in developing these resources has been minimal, mainly due to a lack of suitable markets.

(f) Southeastern demersal fish: Promising exploratory catches of a newly discovered demersal resource ("orange roughy" *Hoplostethus atlanticus*) have been taken in southern waters at depths of about 1 000 m. The species occurrence is patchy and the reason for aggregations is not yet understood. Substantive imports of this species from New Zealand in previous years have ready acceptance on the domestic finfish market.

4. GOVERNMENT REGULATORY MEASURES AND PROBLEMS RAISED THEREBY

Fishing activities in Australia are undertaken by private commercial interest but the activities are subject to Government controls designed primarily to protect the resource. Inland and inshore fisheries (within three miles of the coast) are managed by State Governments while the Commonwealth Government regulates other fishing activities in consultation and cooperation with the relevant State Governments. An outline of the range of control measures currently in force is set out in Table 1.

The Commonwealth Fisheries Act provides that in the administration of the Act, the Minister shall have regard to the objectives of:

(a) ensuring, through proper conservation and management measures that the living resources of the Australian fishing zones (AFZ) are not endangered by overexploitation; and

(b) achieving the optimum utilization of the living resources of the AFZ.

These objectives conform with the provisions of the draft Law of the Sea Convention and are very general in nature.

As will be noted from the list of control measures set out in Table 1, limited entry controls on equipment and size limitations have been used extensively as a management tool. These measures have been implemented in an attempt to limit overcapacity in fisheries as well as to protect the resource from overexploitation. Except in the case of foreign fishermen, there are no catch quotas in operation and little use has been made of taxes and subsidies on inputs or outputs for the purposes of fisheries management.

In some fisheries the control measures have met with a deal of success and generally most fisheries in Australia are not overexploited in a biological sense. The controls over fishing for rock lobsters off Western Australia, for example, have provided both protection for the resource and at least partial success in limiting overcapacity.

The success in limiting overexploitation of fisheries resources around Australia is also due to the low productivity of many fisheries which has limited the economic incentive to expand fishing operations.

However, in recent years excess fishing capacity has developed in a number of major fisheries, especially the prawn fisheries. In some cases the limited entry regimes have not been successful in containing effort largely because of increases in the size and efficiency of vessels. Accordingly, reviews are being undertaken of management arrangements for major prawn and finfish fisheries.

Alternative management arrangements covering possible controls of catches as well as effort are under consideration. A major objective is to ensure that the rate of improvement in technical and economic efficiency in the Australian fishing industry is not impeded in order to enable Australian fishermen to continue to successfully compete on both export and domestic markets.

The arrangements between the States and the Commonwealth for managing fisheries are also to be rationalized to simplify licensing procedures and to reduce arbitrary boundaries which have divided some fisheries.

Table 1

Commercial fisheries management and control measures

Category (I) Fisheries	Management Responsibility	Control Measures
Inshore	Indivitual States	Limited entry, gear restrictions, area closures, size limits
Rock lobster	Comm, States	Limited entry, closed seasons, zones, size limits, gear restrictions (No. of posts)
SA Prawns	Comm, SA	Limited entry, zones, boat size restrictions, gear restrictions (No. of rigs, mesh size, headline length)
WA prawns	WA	Limited entry, fishing and landing zones, gear restrictions (No. of rigs, mesh size, headline length)
Southern prawns	Comm, Qld, NT, WA	Limited entry
East coast prawns	Comm, Qld, NSW, Vic	Limited entry (Qld only), gear restrictions (net sizes)
East coast finfish demersal	Comm, NSW, Vic, Tas, SA	Gear restriction (minimum mesh size), boat size (varies with species), area restrictions (cannot operate in bays and inlets)
Australian salmon	Comm, NSW, Vic, Tas, SA, WA	Limited entry (WA Zones) (WA), closed seasons, (WA), minimum sizes
Shark	Comm, NSW, Vic, Tas, SA	Gear restriction (minimum mesh size), maximum size (Vic)
Fish of the Great Barrier Reef	Comm, Qld	Size limits
Scallops	Comm, Vic, Tas, Qld	Limited entry (Vic) zones (Vic), daily quota (Vic), size limits (Tas), gear restrictions (dredge width)
Abalone	States	Limited entry, zones, size limits, specified species
Category (II) Fisheries		
Southern bluefin tuna	Comm, WA, SA, NSW, Vic	Limited entry (NSW, SA), gear restrictions (bait net dimensions)

Table 2

Resources fact sheet coastal fisheries

Fishery	Major species	Fishing techniques	Present production ('000 t)	Value $Am	Principal market	Potential	Management
(1) Australian Fisheries							
Rock lobster							
Southtern	*Jasus novaehollandine*	Trapping in pots	4-5.5	21-23	Export	No significant increase can be expected (nsi)	Limited entry with pot numbers controlled
Western	*Panulirus longipes cygnus*		8-12	57-62			
Prawns							
S. Australia	*Penaeus latisulcatus*	Trawling	2.2-2.8	10-11	Export	nsi	Limited enty gear control
W. Australia	*P. latisulcatus* *P. esculentus* *P. merguiensis*	Trawling	3-3.5	13-17	Export	nsi	Limited entry gear control
Northern	*P. merguiensis* *P. esculentus*	Trawling	6.5-12.5	43-83	Export	11.5-18	Limited entry
East coast	*P. merguiensis*	Trawling	6.5-7.2	43-48	Export	Inshore resources fully exploited. Possible increase from deepwater	
Scallops	*Pecten meridionalis* *Mimachlamys asperrimus*	Dredging	6-10	5-10	Domestic/ Export	Highly variable	Limited entry and bag limits
Abalone	*Haliotis ruber* *H. laevigata*	Skin divers	6-7	11-28	Export	nsi - culture techniques may generate increases	Limited entry

Table 2 (continued)

Fishery	Major species	Fishing techniques	Present production ('000 t)	Value $Am	Principal market	Potential	Management
Shark SE Aust.	*Galeorhinus australis* *Mustelus antarcticus*	Gillnet Longlines	7-8	8-10	Domestic	nsi	Directed to small shark because of mercury content
SE Trawl	*Rexea solandri* 40% Redfish 15% *Neoplatycephalus* spp. 12% *Nemadactylus* spp. 12%	Trawling	17	15	Domestic	Some incidental species are overexploited, total resource estimated at 30-35 000 t	Proposals for limited entry with effort control being studied
SE deep water trawl		Trawling	not known	not known	Domestic	Exploratory fishing has taken good catches of orange roughy, a fish which is a significant import	
(2) Australian and Foreign Fisheries							
Tuna	Southern bluefin (*Thunnus maccoyii*)	Longline (Japan)	1.5-3	22-32	Japan, domestic and export	nis - may be over-exploited	
		Poling	16	6.3			
		Purse seine	5.5	3.0			
Northern deep water tuna	Yellowfin and bigeye tuna	Longline) (Japan))		1.5	Japan Australia	Australian poling shows some promise for development	Foreign fishing under bilateral agreements
		Handline) (Japan))	0.6-1				
		Poling (Australia)	0.1				
(3) Foreign Fisheries							
NW trawl	Mixed tropical	Pair trawl	20	12-20	Taiwan	40-60 000 t	Foreign fishing under bilateral agreement

Table 2 (continued)

Fishery	Major species	Fishing techniques	Present production ('000 t)	Value $Am	Principal market	Potential	Management
Northern Pelagic	Shark, mackerel and tuna	Gillnet	7	3.5-4	Taiwan	9 000 t	Foreign fishing under bilateral agreement
Squid South east	*Nototodarus gouldii* *Ommastrephes bartrami*	Jigging	8.3 in 1979-80		Japan	Commercial resources off SE Australia	Feasibility fishing involving foreign vessels in SE Aust. 1979-80
(4) Unexploited Resources							
Great Australian bight	Demersal and pelagic	Trawl	-	-	-	3 000 t demersal 10 000 t pelagic	-
Skipjack tuna	*Katsuwonus pelamis*	Poling Purse seine	-	-	-	25-50 000 t	-
Jack mackerel	*Trachurus declivis*	Purse seine	-	-	-	20-50 000 t	-
Pilchards and anchovy	*Sardinops neopilchardus* *Engraulis australis*					Estimated 20 000 t No large concentrations found	-
Lantern and light fish	Maurolicidae Gonostomidae Scopelidae	-	-	-	-	Believed substantial off SE Australia if can be developed	-

Northern Territory
Queensland
Western Australia
AUSTRALIAN FISHERIES
(MOLLUSC)
(CRUSTACEA)
South Australia
New South Wales
Victoria
Rock Lobster
Prawns
Abalone
Scallops

Figure 1

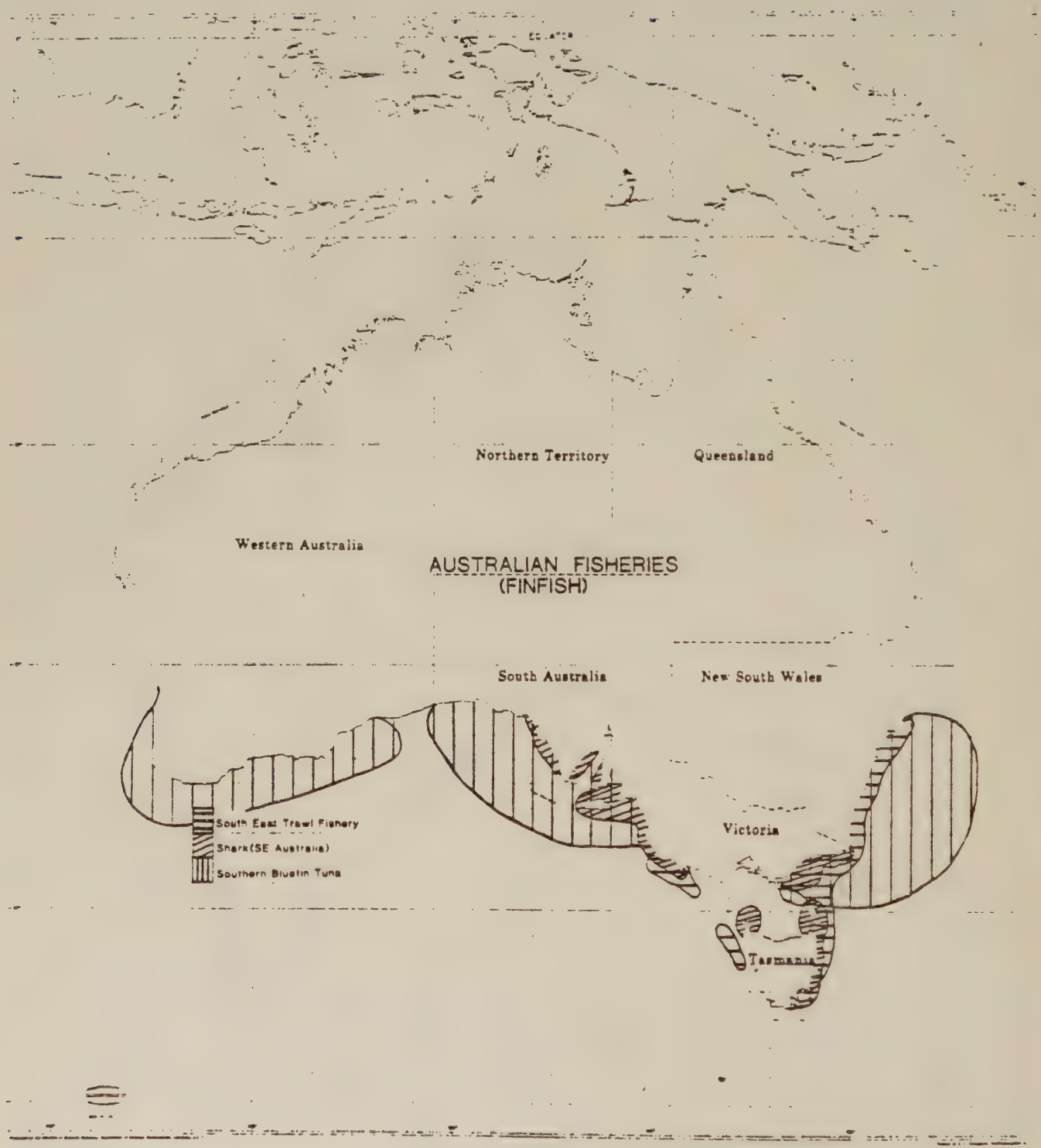
Northern Territory
Queensland
Western Australia
AUSTRALIAN FISHERIES
(FINFISH)
South Australia
New South Wales
South East Trawl Fishery
Shark(SE Australia)
Southern Bluefin Tuna
Victoria
Tasmania

Figure 2

FISHERIES ACCESS
JAPANESE & TAIWANESE
1981-82
Western Australia
Northern Territory
Queensland
South Australia
New South Wales
Victoria
Tasmania
Taiwanese pair trawl & gillnet & Japanese longline operations
Japanese longline only
Permanent Closure
Japanese handline only
Japanese longline & handline
Japanese longline only
Permanent Closure
Permanent Closure
Japanese longline only
Japanese longline only
30 Sep-31 Mar
Permanent Closure
Permanent Closure
Japanese longline only
Squid
Squid (trawl)

Figure 3

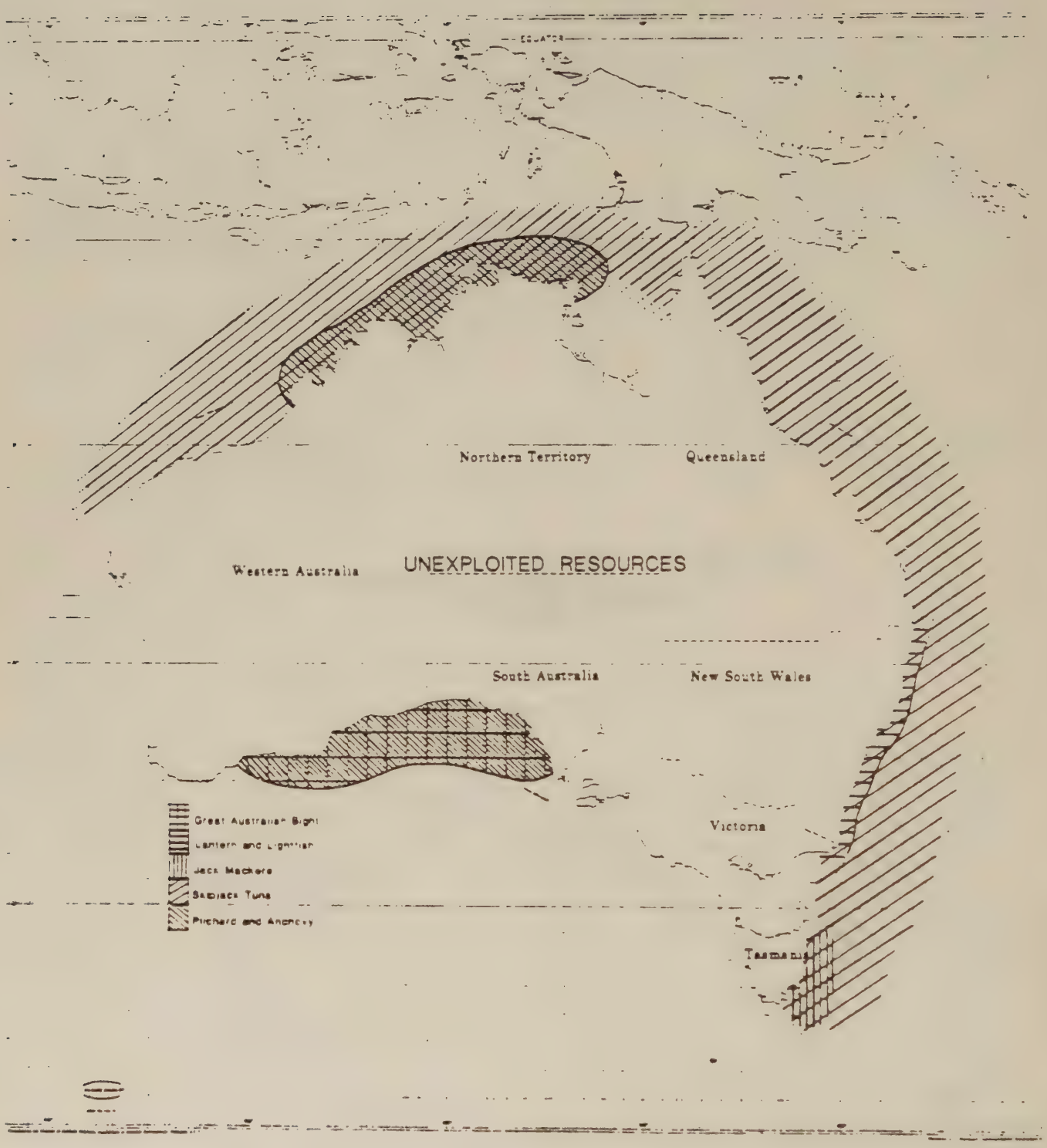
EQUATOR
Northern Territory
Queensland
Western Australia
UNEXPLOITED RESOURCES
South Australia
New South Wales
Victoria
Great Australian Bight
Jack Mackerel
Skipjack Tuna
Pilchard and Anchovy

Figure 4

APPENDIX/ANNEXE F

Fisheries Development in Ethiopia

1. INTRODUCTION

Since Ethiopians are not habitually consumers of fish, cattle has been the main source of protein for the diet. Some fish is consumed only during the religions fasting period. In the past, the price of meat has been lower than that of fresh fish. The bulk of the population is far from the fish resources. Lack of appreciation of the dietary value of fish, unfamiliarity with fish as food and lack of suitable preservation methods limit the consumption demand of fish. These facts used to determine the pattern of utilization of fish production both in the marine and inland fisheries.

There is little fishing tradition among the population living near fresh waters; fishing technology and methods are very poor. Fish is not easily available in the cities. The distribution mechanism is not developed. Supply is not regular. Selling points are very few. Proper handling is very difficult and as a result fish quality is uncertain. Therefore regular consumption is not encouraged.

1.2 Marine Resources

The marine resources are located in the territorial water of Ethiopia in the Red Sea extending about 1 000 km from north to south. According to earlier estimates, 50 000 t of sardine and anchovies could be caught annually. An annual yield of 7 000-10 000 t prime demersal and other demersal fish could be obtained. Sharks are abundantly available and an estimated 5 000 t could be caught by gillnets. There are shrimps and lobster grounds too. Resources of Trochus shells seem to be available at greater depths and could be exploited. The Red Sea is also rich in acquarium fish resources and these offer possibilities of development for the fisheries subsector.

Table 1

Estimated annual potential production

	t
Pelagic fish	50 000
Prime demersal fish	3 500
Shark	5 000
Other demersal fish	7 000
Lobster	140
Shrimp	500
Total	66 140

1.3 Freshwater Resources

The freshwater resources are located in rivers, streams and lakes. The Ethiopian network of lakes, rivers, swamps and flood plains covers an area of more thant 13 million hectares of which 750 000 ha consists of freshwater lakes located within an average radius of 400 km from the capital city - Addis Ababa. The potential commercial yields (mainly Tilapia, Barbus, Nile perch and carp) of the lakes have been estimated on the basis of limited gillnet surveys between 60 to 80 kg/ha and are summarized in Table 2.

No information is yet available on the fisheries potentials of other inland waters; including the principal rivers, Lake Tana and other waters; which is estimated to range from 7 000-10 000 t per year.

Table 2

Potential commercial yields of Ethiopian rift valley lakes

Lake	Yield kg/ha	Area km^2	Annual potential yield (t)	Remark
Abaya	60.0	1 160	7 000	of which 4 000 t Nile perch
Awassa	77.5	129	1 000	-
Koka	80.0	250	2 000	-
Chamo	60.0	557	3 300	of which 1 900 t Nile perch
Ziwai	69.0	434	3 000	-

Table 3

Commodity balance (1980/81)

	Production	Imports '000 t live	Exports weight	Total supply	Per capital supply kg/year
Fish for food	4.4	0.3	-	4.7	0.16
Non-food	0.2	-	-	-	-

Estimated employment (1980):

(i) primary sector: 3 780
(ii) secondary sector: 150

Gross value of fisheries output:
(at ex-vessel prices) 1979/80: US$ 1 326 000

The fisheries industry in Ethiopia was at its highest level around 1965 (22 000 t) after which a steady reduction in activity and production was observed until 1971 (13 600 t). In 1972 production decreased to 3 800 t and the industry has not recovered yet. Even at its highest level of activity the Ethiopian fisheries industry was at a rudimentary stage, the present level makes it even harder to talk about fleet structure. However, at Massawa six motorized boats are operational while 11 inboard, 5 outboard and 66 non motorized boats are reported around Assab. Out of the 82 total reported around Assab, 40 need extensive repair before they can be operational.

The highest potential (50 000 t/year) and actual catch (20 000 t, 1965) is sardines and anchovies which is reduced to fish meal for export market. A large export market is available. However the level of production and processing facilities are lacking to allow export.

Local consumption of fresh fish is rather low due to the cultural and religion eating habits of the population. In recent years, with an effort to overcome the problem, demand for fish has shown an increase to the point where the supply cannot satisfy demand during the fasting period.

Even at its highest level of activity, the industry was geared towards exploitation of resources without any investment pertaining to basic infrastructure, storage, processing and distribution facilities. With such a state of the industry, the coastal fisheries have reached the stage of almost minimum activity.

2. MAJOR CONSTRAINTS

The current fish production is affected by a complex of technical, economic, social and other factors. The main determinant factors are presumed to be the number and skills of fishermen; the number, types and power of fishing boats; the technological level of fishing gears; fishermen organization in fish production and marketing. The attitude of fish consumers also reflects on the size of the domestic fish market. Lack of fishing and processing capabilities also prohibits a more integrated production and marketing system both for internal and external demand. Lack of a comprehensive resource study and updated information are also major constraints to introduce new development schemes.

3. DEVELOPMENT PROSPECTS

Eventhough reliable resource assessment surveys are lacking, the Ethiopian coastal and inland water bodies are significant natural resources with considerable potential for development of sardines and anchovies, the highest potential, can support the development of fish meal plants and for canning facilities for direct human consumption. Canning has special attraction not only from the stand point of direct human consumption, but also for distribution throughout the country.

Food fish, such as red snapper and grouper, could support development activities for both export and local market. Gillnetting for shark has increased and there are some indications that this resource could support development geared to the export of shark fin, flesh, skin and liver oil. There are also potential shrimp and lobster fishing grounds. Aquarium fishing could be an attractive venture considering the varied species available and the proximity to the European market.

Inland water fisheries are even more primitive than in the coastal areas. However, the resource potential is adequate to supply the local market for a long time to come. Some species, such as Nile perch, can make significant contributions to the industry if attention is given to its development.

When substantial development of the fisheries industry is contemplated, most of the produce must be directed to the export market. Fish meal, shark fin, shark liver oil, shark skin, shells, fish maws, dried sea horses, aquarium and other ornamental fish have tremendous demand in the external market.

Local demand for fish is rather low, concentrated at production sites and the major market centers such as Addis Ababa and Asmara. Although the religious and cultural eating habits of the population are a limiting factor, a constant supply of fresh fish at reasonable price, convenient and adequate distribution centers and facilities, will increase demand significantly.

At present external assistance has been limited to motorization of coastal vessels by FFHC. With assistance obtained from EEC, a project study for the development of the rift-valley lakes has been completed. The EEC-financed project component include provision of improved fishing gear for fishermen cooperatives, constructions of cold storage facilities at two production sites and Addis Ababa, freshwater research center, fish shops at Addis Ababa and a headquarter for the Fisheries Department and Corporation. A remarkable progress is also realized in fishermen cooperatives establishment which speeds the development of the fishery sub-sector.

The potential of fisheries resources is considerable with significant development prospects. Fisheries can contribute significantly to the national economy as foreign exchange earner and as source of protein for the national diet.

In order to realize the goals of the industry reliable and adequate assessment of resources need to be carried out. On the basis of these resources assess project studies must be carried out with emphasis on the best utilization of resources. Development prospects have to take into consideration the constraints of the industry and make the effort to alleviate some. These include technical assistance in almost all aspects of the industry, complete assessment of basic infrastructure, production technology; processing, storage, distribution facilities, and know how. Regional sources of assistance in these fields are being sought specially in areas of investment in the Red Sea area.

3.1 Research

The research need in the fisheries sub-sector is of a tremendous magnitude. Identification of the different species and the possibilities of introducing suitable management system is one aspect that would require a major research test. Marketing of the fisheries product is another aspect which would require indepth study. For reasons of similar nature (and due to lack of resources and manpower) a small freshwater research center has been established at Sebeta (at the outskirts of Addis Ababa).

The main objectives of the center include breeding for introduction in natural oval man-made water bodies, training of fishermen and extension agents, surveys and fish culture. Similar establishment is overdued in the Red Sea area for marine fisheries. The development of the fisheries sub-sector is very much dependent on such undertakings.

APPENDIX/ANNEXE G

Country Paper on Fisheries Development in India

1. PROFILE OF NATIONAL FISHERIES AND SUMMARY OF LONG TERM OBJECTIVES

The Exclusive Economic Zone of India covers an estimated area of 2.02 million square kilometres which is about two-thirds of the terrestrial extent of the country. In addition, it has another about two million hectares of brackishwater area spread along the coastline in the form of estuaries, backwaters, lagoons and mangroves. Even after three decades of planned development of marine fisheries, the fishery remains as a small-scale sector in spite of the inclusion of about 19 000 small mechanized boats. During the last decade, attempts have been made to encourage deep-sea fishing.

1.1 Marine Fish Production

The total fish production in the country, for the last five years is as follows:

(in lakh t)

Year	Marine	Inland	Total
1977	14.49	8.63	23.12
1978	14.90	8.16	23.06
1979	14.92	8.48	23.40
1980	15.48	8.75	24.23
1981	14.36	9.79	24.15

Major contribution to marine fish production are made by a few small pelagic species such as oil sardine (*Sardinella longiceps*), mackerel (*Rastrelliger kanagurta*) and Bombay duck (*Harpodon nehereus*), and the penaeid prawns (*Penaeus* spp.).

These four major groups contribute to 33% of annual fish production in the country. There are fluctuations in their production from year to year and in the case of mackerel and penaeid prawns, the trend has been that of decline.

Besides the above major commercial species, the fish production comes from an array of several groups of medium importance from the pelagic as well as demersal stocks like sardines, ribbon fish, anchovies.

1.2 Production by Sectors

As mentioned earlier, the small-scale sector continues to be the single dominant element of the country's marine fisheries and this sector consists of the artisanal fisheries and the small-mechanized fisheries. The latter is comprised of small trawlers concentrating on the shrimp resource along the entire coastline and the small purse-seiners which have recently been introduced along Karnataka and Kerala coasts for the pelagic species, this would also include those small mechanized vessels operating gill-nets and dolnets where the power is used only for the mobility of the craft. The traditional fisheries sector contributed to about 67% and the mechanized boat sector to about 32% of annual production in 1981.

1.3 Purse-Seine Fishery - Its Performance

Experimental purse-seine operations initially carried out at Cochin and Goa proved successful and this led to the development of a purse-seine fishery in Karnataka since 1977 and in Kerala since 1979. There are about 425 purse-seiners (boats of 38-43 ft length) in the country today, of which 300 are in Karnataka, 75 in Kerala, and 50 in Goa. The purse-seine fishery has been an economic success in the beginning, but with indiscriminate introduction and operation, the economic returns got reduced although the level of production remained the same.

1.4 Fishermen Population

The total population of fishermen in the country is estimated at 53.8 lakhs (1977). About 32.8 lakh fisherfolk live along the coastline and the rest on the banks of rivers, lakes and backwaters. Kerala has the largest number of fishermen population accounting for about 30%, followed by Tamil Nadu, Andhra Pradesh and Makarashtra.

1.5 Fisheries Cooperatives

The policy of the Government is to organize the small fishermen in fisheries cooperatives for owning fishing craft, marketing processing on one hand and socio-economic upliftment of their condition on the other.

1.6 Marketing

While India has developed a strong export market for marine products, internal marketing is not well-organized. The efforts of Fisheries Corporations in internal marketing are meagre and are localized in large cities. There is need for improving internal marketing system through creation of adequate infrastructural facilities such as roads, electricity and water, cold storages, ice plants, refrigerated trucks, retail sale points, etc. from centres of production to the consumer points.

An all India Marine Fish Marketing Survey has been completed and a similar one for Inland Fish Marketing is under way. These surveys will throw up adequate data for preparing a sizeable marketing net work. The States would also be encouraged to introduce schemes for modern fish market insulated boxes, display cabinet containers and improved fish units.

1.7 Coastal Aquaculture

Recent developments in coastal aquaculture include techniques for culture of marine penaeid prawns, edible oyster, mussel, pearl oyster for pearl production, seaweed and finfish. Prawn culture is making an impressive growth in several parts of the country. While business houses are investing capital in prawn culture, the small farmers and fishermen do not have the means for entering into this field. The technology for production of non-conventional products such as oysters and mussels still remain largely in the laboratory, and the few attempts made to transfer this technology to the field and there is some current interest in taking up commercial production of cultured pearls. The technologies of coastal aquaculture at this stage are essentially field oriented and aimed at semi-intensive production and therefore do not have the control components such as additional nutrition, water quality management and systems mechanization. Inputs being moderate an production rates high, the present system suits the general economic situation of the country and it is not intended to go in for sophisticated high-cost technologies. As the marine fishing industry further evolves with mechanization of the country crafts, there will be more and more displacement of fishermen and coastal aquaculture is expected to provide alternative or complementaty avocations.

1.8 Pelagic Fisheries

The pelagic fisheries is dependent on a number of inshore stocks, both resident and migratory. Traditionally the oil sardine, mackerel and Bombay-duck have been the major species which have come under heavy fishing pressure and their production trends have always reflected the trends of all India marine fish production. Oil sardine and mackerel are migratory and the fishery exploits them when the adults reach the inshore grounds during south-west monsoon for breeding and when the juveniles concentrate in the same grounds for feeding during the post-monsoon period. There are a number of other species which are in this pelagic realm, and notable among them are the anchovies, ribbon fish and carangids. Definite indications of large stocks of oil sardine, mackerel and carangids in the depth zone 20-75 m have come from the recent surveys. A single resource which has a very high concentration in the 20-50 m zone is the anchovies, particularly in the south-west and south-east regions. Along the entire east coast, lesser sardines, ribbon fish and carangids have a high potential.

1.9 Demersal Fisheries

Unlike the pelagic resources, the demersal fishery is composed of a fewer groups and all capture coming from a single type of gear - the trawlnet. The sciaenids, elasmobranchs, silverbellies and catfish form the major groups. While there is a great scope for expansion of all demersal fish groups, catfishes, perches and sciaenids would be particularly important. The present demersal fishery is shrimp-oriented, using smaller mesh size, resulting in wasteful utilization of young fish resources. Specific fish trawls for finfish capture will have to be introduced. For finfish there is scope for introduction of medium size trawlers to operate in the 20-50 m depth zone for resources like perches, catfish and sciaenids.

1.10 Crustaceans

The mainstay of the fishing industry of India, in economic terms, is the penaeid prawn fishery. This is also the major component of the marine products export industry. In the absence of any regulation on this fishery so far, fishing pressure has been increasing steadily and this has caused concern in its management. The only scope for obtaining increases would be through appropriate regulation of fishery (mesh size and closed seasons) and increase in effort in the northeastern region and also in areas beyond 50 m depth. The non-penaeid prawn fishery which is of a regional character would also yield only a marginal increase. Yields from other crustaceans such as lobsters and crabs would not be substantially higher than the present production but marginal increases would be possible. Thus the crustacean fishery potential is a delicate one and has to be handled with great caution and appropriate management for increasing the production. Of course, the deep water resources of prawns and lobsters which are patchy in distribution can sustain some increase in production.

1.11 Cephalopod Resources

The squid and cuttlefish production which stands today at 12 000 t is a by-catch of the shrimp trawlers and there is no exclusive fishery for these species. There is considerable scope for increase in production for these species. There are positive indications of high potential of oceanic squids in the EEZ. This resource would play an important role in the future expansion of Indian fishing industry. The strategy for development of cephalopod fisheries would be:

(i) introduction of appropriate fishing methods for squids and cuttlefish in the depth zone 0-50 m to exclusively exploit these resources;

(ii) exploration and exploitation of the cephalopod resources in the outer continental shelf (50-200 m) using squid jigging and other modern fishing methods for which expertise would be obtained from outside India for training of Indian personnel;

(iii) exploration and exploitation of the oceanic squids in the open ocean regime where a considerable potential has been stated to occur.

1.12 Oceanic Fishes

The Indian fisheries at present do not touch upon the oceanic resources, except for the marginal production of skipjack in the Lakshadweep. A few attempts made on experimental fishing for tunas in earlier years were not successful due to operational and management problems. India proposes to make a thrust forward in tuna fishing without being complacent. The pelagic sharks, dolphin fish, wahoo, opah and lancet fishes would form an important by-catch in tuna fishing. The strategy for development of oceanic fisheries would be:

(i) surface fishery for skipjack and other tunas and tuna-like fishes using purse seine;

(ii) augmenting production in Lakshadweep and Andaman seas by use of artificial aggregators and related fishing methods;

(iii) introduction of larger boats for live-bait pole-and-line fishery in the Lakshadweep;

(iv) bait fish culture;

(v) entry into long-line fishing and purse-seining, initially through chartering or joint-venture programmes, and on developing indigenous competence to develop and own fishing fleet;

(vi) utilization of by-catch.

1.13 Coastal Aquaculture

It is recognized on a global basis that aquaculture will have to play an important role for augmenting fish production. This strategy is particularly relevant to India which has an established traditional system of the art of aquaculture in fresh waters and saline waters and extensive brackishwater resources and important species resources. At an average production rate of 500 kg/ha/annum, the production potential of the estimated two million hectares of brakishwater area will be tremendous, even in a phased development. Besides for increased production, this strategy is very important for generating self-employment potential for educated unemployed , skilled and unskilled personnel in the coastal rural sector.

1.14 Fishing Harbours

Landing and berthing facilities for different types of fishing vessels is being created under three major categories. Major fishing harbours are being constructed to cater to the deep seafishing trawlers meant for full exploitation of the resources within the Exclusive Economic Zone. These major fishing harbours are constructed within the major commercial harbours of the country taking the infrastructural advantage already available on these places. Minor fishing harbours along the contry's coast at other places are created to cater to medium and large sized fishing vessels. Apart from these major and minor fishing harbours, a number of small landing centres are being developed to provide the basic necessity for landing small mechanized fishing vessels and non-mechanized fishing craft of traditional sector.

Three major fishing harbours at Visakhapatnam (Andra Pradesh), Cochin (Kerala) and Roychowk (W. Bengal) are commissioned and two more at Bombay and Madras are under construction. Minor fishing harbours at 13 places are under construction.

Survey and investigations are being continued by a Central Organization, Pre-Investment Survey of Fishing Harbours for identifying, investigating and preparing viable project reports.

1.15 Product Utilization

The disposition of fish catch in India in 1981 is estimated as follows:

Market fresh	67.41%
Frozen	5.58%
Cured	17.00%
Canned	0.23%
Reduced	6.36%
Misc. purpose	2.65%
Offal for reduction	0.77%

The major export component is largely composed of penaeid prawns and to a small extent fish, froglegs, cuttlefish, squids and lobster tails. The exports bring in a foreign exchange revenue of I.Rs. 2 867 million (1981 figure) but only 10% of the total marine catch is exported. Obviously there is further scope for increasing the export earnings and diversifying fish exports without causing any significant dent on produce for internal consumption. The export items need to be diversified to include more and more of non-shrimp items. The shrimp exports should be regulated closely for size and quantity, besides quality control, so that the pressure on the resources can be eased as a measure of conservation of this important export-earning commodity.

The following statement gives an indication of the export of fisheries products during the last five years.

Year	Quantity (t)	Value (I.Rs. in million)
1977	64 964	1 797.4
1978	77 946	2 121.6
1979	92 184	2 620.2
1980	74 542	2 188.7
1981	75 375	2 867.1

1.16 Fishermen's Conditions and Income

With the advent of mechanization, many fishermen were helped to acquire boats and gears with subsidy by the Government. This resulted in a small percentage of fishermen to cross the mark of average who become relatively better placed than their brethren. In some of the centres where adequate infrastructure facilities have been developed, the annual income of a fishermen family in the artisanal sector is about I.Rs.6 000 and that of a family in the small mechanized sector is about I.Rs. 12 000. Fishermen in the artisanal fisheries and those working as labourers in the fishing boats in centres with good marketing facilities have an average income of I.Rs. 1 000-1 500 per year. However, a vast majority of the fishermen working in remote coastal villages have a much lower income. Indebtedness is a universal problem in the artisanal sector and it is here that the middlemen and money lenders exploit the situation badly. The housing and hygiene are pitiable and the literacy is very low.

1.17 Socio-Economic Conditions of Fishermen

The traditional fishing boats operate within a limited area from their centre. Most of them are engaged in gillnetting. They are not equipped for catching shrimps except through cast net which can be operated in shallow area near the shore and small gillnets which can be operated from the shore. They also lack any organizational base for efficient marketing.

Both the country boat fishermen and the mechanized fishing boat operators are assisted with schemes of subsidy and subsidy-cum-loan facilities for acquisition of fishing boats, gear and other fishery requisites and for the improvement of the indigenous crafts and gears. Other infrastructural facilities such as landing and berthing facilities, approach roads, water supply, auction halls, fish curing yards, service stations, supply of ice, etc. are also provided to these fishermen. A large number of ice plants, cold storages and frozen storages have also been installed along the coastline for the benefit of fishermen. Schemes are also implemented by the State Goverments for fishermen housing. Some of the States have created fishermen Relief Funds for welfare schemes for fishermen.

Various States have taken up some programmes to develop and demonstrate appropriate technology for small-scale fisheries in the use of various types of fishing crafts, gear, fish handling and utilization of fish.

A regional FAO/SIDA Project, "Bay of Bengal Programme" for the development of small scale fisheries is in operation with its headquarters at Madras. This project is funded by the Swedish International Development Authority and executed by FAO. It aims to improve the conditions of small-scale fishermen and to help the small-scale sector.

Under the Fish Farmers' Development Agencies, rural fish farmers are trained in the modern methods of fish farming and are encouraged to take up fish farming by supplying necessary inputs such as fish seed, fertilizer and fish feed, arranging institutional credit for fish pond improvement, providing subsidy for fish pond improvement and providing technical/extension support in fish pond management, culture, harvest and marketing of fish.

2. GOVERNMENTS' POLICIES AND PROGRAMMES

India is one among the few developing Countries which has a fisheries resource data base which helps in formulating fisheries policies.

The Government's principal objective to increase fish production both marine and inland is to promote capture as well as culture fisheries, deep sea fishing, increase in fish seed production, creation of infrastructural facilities and marketing arrangements.

The Government's policy towards deep sea fishing industry is to encourage Indian entrepreneurs to introduce as many deep sea fishing vessels as possible in the shortest possible time to utilize the available fishery resources in the exclusive zone.

The coastal fishermen are being assisted to improve their efficiency and economy through improvement in the design of boats and supply of modern gear material. Improvement is also being taken up in handling storage processing and transportation of fish catches in as many coastal fishing landing centres.

For indigenous construction of fishing vessels, a subsidy of 33% of the cost of the vessel is provided. A soft loan scheme through the Shipping Development Fund Committee is in operation for acquisition of fishing vessels. Since the economic availability of fishing operations beyond the present fishing area has not yet been fully established, the industry has not been able to make capital investment required for deep sea fishing operations. Indian estrepreneurs have been promoted to charter foreign fishing vessels under the charter policy announced recently. The private entrepreneurs have also been promoted to import deep sea fishing vessels from different countries. The Government of India will welcome foreign investment in deep sea fishing. Joint ventures with equity participation and technical assistance including chartering of foreign fishing vessels are permissible under the Government's policy.

Attention is also being paid to the training of fishermen in modern deep sea fishing. The Central Institute of Fisheries Nautical and Engineering Training at Cochin and its units at Madras and Visakhapatnam train the manpower required statutorily under the Indian Merchant Shipping Act, 1958 for manning ocean going fishing vessels and also the personnel for supporting shore establishments. Apart from the Training Institutes, there is a large number of Research Institutes in the marine sector which provide research support for the development of marine living resources. The Central Institute of Fisheries Education at Bombay and its units at Barrackpore (West Bengal), Agra (U.P.), and Hyderabad (A.P.), train the candidates in different aspects of Fisheries Science including extension.

2.1 Legislation

A legislation to effectively deal with the unauthorized fishing in our EEZ has been recently promulgated under the "Maritime Zones of India (Regulation of fishing by foreign vessels) Act, 1981". Under the Act, rules have been framed which require that every owner of a foreign vessels or any other person who intends to use such vessel for fishing within any maritime zone of India will have to get a licence for the same.

The interest of the small boat owners who mainly fish in coastal waters are protected through legislation by the State Governments. A Model Marine Fishing Regulation Bill was circulated to the Maritime States and U.Ts. for adoption. According to the guidelines issued, waters up to 5 km from the shore have been reserved exclusively for traditional fishing crafts, mechanized boats beyond 5 km from the shore and the deep sea fishing vessels beyong 10 km from the shore. On the basis of this model bill, some of the States have enacted suitable legislation. This would avoid conflicts between small-scale fishermen operating traditional fishing crafts and mechanized boat owners and operators of large fishing vessels.

2.2 Inland Fisheries

Efforts are being made to augment the production of fish seed, its availability, education and training of technical personnel and fish farmers in farm techniques, promotion of aquaculture, composite fish culture, etc. To help rural fish farmers, Fish Farmers Development Agencies have been set up. These agencies provide a package approach by way of long-term lease of water areas, free training and extension support and subsidy for inputs and reclamation.

Brackishwater fish farming has also been identified as a potential source of augmenting the income of individual fishermen families and increasing production of prawns for exports. The Government is proposing to set up a Coastal Engineering Project for developing brakishwater fish farming in the country.

2.3 Assistance to Small Fishermen

The fishermen operating mechanized and non-mechanized boats are assisted with schemes of subsidy and subsidy-cum-loan facilities for acquisition of fishing boats, gear and other fishery requisites and for the improvement of the indigenous crafts and gears. Infrastructural facilities such as landing and berthing facilities, approach roads, water supply, auction halls, fish curing yards, service stations, supply of fish, etc. are also provided to these fishermen. Some of the States have created fishermen relief funds for welfare schemes of fishermen.

A Regional FAO/SIDA Project, Bay of Bengal Programme, is under operation in the Bay of Bengal region with headquarters at Madras. This project is funded by Swedish International Development Authority and executed by FAO. The objective of the project is to improve the conditions of small-scale fishermen and to help increase fish production from the small-scale sector.

3. INTERNATIONAL COOPERATION ON FISHERIES

India would like to associate itself in overall development programmes of the under-developed and developing countries in the field of fisheries through research support, survey and training of personnel as well as in activities relating to transfer of technology through training and demonstration. India would also encourage joint ventures in the field of marine fisheries.

In the field of inland aquaculture particularly for freshwater aquaculture, India has been recognized as a leader under global aquaculture programmes of FAO/UNDP. India has abundant information on freshwater and marine fisheries and proven expertise in a large number of national institutions, universities and Government agencies and it would, therefore, be possible to organize a system of information dissemination for the mutual benefit of the developing and underdeveloped countries.

4. FISHERIES STATISTICS AT A GLANCE

Area		3 287 782 km^2
Shelf area	about	452 060 "
Length of Coast Line		7 517 km
Population: males		353 347 249
females		330 462 802
Total		683 810 051

Fishermen Population (Livestock Census 1977)

Males	16.12.100
Females	14.93.500
Children	22.77.400
Total	53.83.000

Indian Exclusive Economic Zone 2 013 410 km^2

Principal Marine Fish Catches (in t)

	1980	1981
Elasmobranchs	49 654	48 279
Eels	17 788	82 761
Catfishes	59 279	53 998
Oil sardines	160 845	256 853
Anchoviella	52 486	53 876
Harpodon	116 166	98 598
Perches	32 683	26 196
Sciaenids	123 998	111 714
Ribbon fish	59 531	43 623
Pomfrets	51 545	50 534
Mackerel	58 847	61 779
Tunnies	30 378	21 644
Penaeid prawns	119 972	90 894
Cephalopods	8 138	12 325
Miscellaneous	151 381	127 939

Fishermen Population in Livestock

(Census 1972 and 1977)

		1972	1977 (P)
1.	Total number	50.46.500	53.83.000
	(i) males	14.58.100	16.12.100
	(ii) females	14.03.500	14.93.500
	(iii) children	21.84.200	22.77.400
2.	Number of family members engaged in different fishing operations	14.06.700	17.67.400
	(a) N^{O} of family members engaged in actual operation of fishing for fish seed collection or both	7.68.200	8.85.700
	(i) full time	3.82.600	4.51.100
	(ii) part time	3.85.600	4.34.600
	(b) Other occupations	6.38.500	8.81.700
	(i) marketing of fish	2.60.300	3.63.400
	(ii) making/repairing of nets	1.65.000	2.09.100
	(iii) curing/processing of fish	68.300	90.100
	(iv) others	1.44.900	2.19.100

APPENDIX/ANNEXE H

Country Profile: Indonesia

1. INTRODUCTION

As an archipelagic State, with about 70% of its territory covered by marine waters, Indonesia has a dominant marine fisheries. Around 74% of its fish production in 1981 was contributed by this sector. Although relatively small, the inland fisheries sector cannot be overlooked, particularly the aquaculture activities, which have great potentials for expansion.

The Indonesian fisheries in general is dominated by small-scale operations, characterized by low technological inputs and low productivity. As a totality however, the small-scale fisheries' contribution to the national fish production is substantial. It is estimated that the small-scale fisheries accounts for about 90% of the total fish production.

Marine fishing is engaging about 900 000 fishermen and is mainly operated in the inshore waters, especially along the coast of the densely populated areas of Java, Sumatera and South Sulawesi. This is mainly caused by the structure of the fishing fleet, where small fishing boats are dominant, unabling them to reach more distant fishing grounds. There are about 274 200 fishing boats at present, of which 225 600 are no-powered boats. The majority of the powered boats are small in size, being less than 10 GT each.

The development of the bigger powered fishing boats is by regulation directed to the offshore waters, to prevent unfair competition with the small-scale inshore fisheries. Nevertheless, overlapping in fishing grounds frequently occurred. This is especially the case with the trawl fisheries, which eventually has lead to the banning of trawlers in all Indonesian waters.

Fish capture is also carried out in inland open water systems. About 300 000 fishermen are fishing in lakes, reservoirs, rivers and other open water bodies on a more or less part-time basis combined with other agricultural activities. Open water fish capture is entirely small-scale, with only a small fraction using powered fishing boats.

Aquaculture is also small-scale in nature, low in productivity and with high degree of dependency upon nature. There are more than 600 000 fishfarmers carrying out brackish-water culture, freshwater culture, paddy-cum-fish culture, and cage culture in open water systems. Mariculture is still on a development stage.

The total fish production has reached 1 869 000 t in 1981. About 50% of the total fish produced is processed into salted and dried fish or other traditional preserved products. A small amount is canned, and most of the balance is marketed fresh, frozen or alive. Export of fishery products has reached a total of 85 000 t in 1981 with a value of US$ 231 million. On the other hand about 59 000 t of fishery products were imported during the same year valued at US$ 37 million.

Fish consumption is still quite low, with a national average of 12.4 kg/*caput* in 1981. The level varies somewhat from area to area, ranging from 5.8 kg to 41.1 kg/*caput*. High fish consumption rates are found in Kalimantan, Sulawesi, Maluku/Irian Jaya with averages exceeding the optimum target of 22.5 kg/*caput*/year while Sumatera is nearing that target. The lowest are in Java, Bali and Nusa Tenggara with levels still below 10 kg/*caput*.

What has been achieved up to the present is part of the long-term objectives of fisheries development, which now reached the fourth year of the Third Five-Year Development Plan. The main objectives of fisheries development can be summarized as follows:

(1) to attain better income and better living for the small fishermen and fishfarmers;

(2) to increase the productivity of every fishing efforts and at the same time increase the total fish production;

(3) to increase fish consumption, particularly among the low income population groups;

(4) to increase exports and decrease imports of fishery products;

(5) to have better control on the utilization and management of fishery resources.

The achievement of the objectives however, cannot be separated from each other. Attaining better income and better living for the fishermen and fishfarmers can only be achieved by increasing the individual productivity of each fishing effort. But all this can only be achieved if it could be complemented with the improvement of the marketing system.

With a projected annual production increase of 6.2% during the next Five Year Plan it would be possible to increase both fish consumption and exports. With an elasticity of demand on fish of 0.8, an income growth of 4.3%/*caput*/year, and a population growth of 2.2% per year, the *per caput* consumption will reach 15.7 kg at the end of the Fourth Five Year Development Plan in 1988. On the other hand exports will reach a value of US$ 726 million. This will hopefully have a positive effect to the import level of fishery products, in the sense that it can be further reduced from the current level, except for fishmeal which will still increase considerably to support the development of cattle industry.

The achievement of all the development objectives will only be safeguarded if complete control could be exercised on the utilizaiton and management of the fishery resources. This could only be accomplished if an effective monitoring, control and surveillance (MCS) system and mechanism could be established and maintained throught the country.

2. MAJOR ISSUES ENCOUNTERED

With 0.9 million square miles of archipelagic and territorial waters and 0.8 million square miles of exclusive economic zone (EEZ) under its jurisdiction, Indonesia has the control on the utilization of a potential yield of about 4.7 million tons of marine living aquatic resources per year. From its 13.7 million hectares of open waters around 0.7 million tons of freshwater fish species could be exploited per year, while from the existing fish ponds covering an area of 340 000 ha, an additional 0.7 million tons could be expected. The aquaculture potentiality is however quite flexible, depending on several internal as well as external factors.

With a total fish production of 1 869 million tons in 1981, the level of exploitation has just reached 30% of the resources potentials. The problem of resources depletion however, is already becoming a threat in many inshore waters and open water systems. Indonesia is therefore facing a hugh task in both developing and managing her fishing resources toward a sound and rational utilization for the utmost benefit of the country and to help the world solving the food problem.

2.1 Problem Facing the Attainment of Better Income and Living

The main way to give better income and better living to the fishermen and fishfarmers is to increase their productivity. According to socio-economic surveys carried out at major fishing areas of Indonesia, average productivities, and consequently the income attained increased in line with the increase of technological input or the size of the fishing household exercised. This counts both for marine capture fisheries and brackish-water culture fisheries as can be seen from Table 9 and Table 10 attached.

Being generally the poorest among the poor within the rural community, the small-scale fishermen and fishfarmers are not in the capacity to finance any improvement of their undertaking. It would therefore need a special credit scheme if the introduction

of new technology should be implemented by the low-income target groups. An appropriate credit scheme should not only be easy in its financial terms and conditions, but also be simple in the disbursement and repayment procedures. Past experiences have shown that those conditions have not always been met.

With the physical means in hand, the fishermen and fishfarmers might still not be able to implement the new technological input. Training and extension will be needed to improve their technical skill and to acquaint them with the new technology. The existing training and extension system and mechanism however, still lack the capacity to face a concerted action covering a wide segment of the fishing community.

Besides depending on their productivity, the income of the fishermen and fishfarmers also depends on the market value of their products. This in turn is determined by the quality of the product, and the chance to get the best price at the landing site or even at the whole-sale market. Lack of sufficient ice at reasonable price for preserving fish and appropriate processing plants, still hamper many fishing communities, especially in the remote areas. Fish marketing still lack the support of an appropriate fish marketing information system, and while State fishery enterprises already intervene to cope with production gluts and poor accessibility to markets, the role is still very limited.

Increasing productivity can only be carried out if resource availability can support such efforts. Most inshore waters along the densely populated areas are nearing resource depletion as a result of over-investment using small boats incapable to fish further off-shore and overlapping of fishing grounds.

This is manifested among others by clashes between fishermen groups using different technology levels, including trawls, which eventually culminated with the total banning of trawlers. The problem of resource depletion and over-crowding in fishermen and fish-farmers communities also lead to the idea of transmigrating fishermen and brackishwater fishfarmers to potential areas outside Java.

Over-crowding in fishermen communities does not only affect the resource potentials and the productivity of the fishing efforts. In fact it also affects the development of the community itself. Over-crowding has caused encroachment of the fish-landing and fish processing sites by non-fishing activities, including expansion of living quarters of the community. This makes the development of the fishing establishment very difficult, resulting in health and sanitation hazards, which might have direct effect to the quality and value of the products.

2.2 Problems Relating to Fish Consumption

The low level of fish consumption particularly in Java, Bali and Nusa Tenggara has many causes. Compared with rice as the staple food of the Indonesian population, the demand for fish is more elastic. It is quite understandable therefore, that for Java where most of the impoverish population are living, the *per caput* fish consumption is the lowest. This is to some extent valid to Bali and Nusa Tenggara, but this region is relatively rich in animal protein substitutes from animal husbandry products.

Seen from the purchasing power of the population, the promotion for consuming more fish should be primarily directed to the low income groups. In Indonesia about 63 million people or 42% of the total population consume fish less than the national average of 12.4 kg/*caput*/year. They consist of people spending less than Rp. 4 000/*caput*/month on household expenditures as can be seen from Table 11 attached. Most of them are living in the rural areas.

Another important factor inhibiting fish consumption is food habit. Although not entirely prohibiting, many ethnic groups in Indonesia, are discouraging the consumption on fish or certain fish species for several reasons. The situation tends to change within the younger generation, but the influence of the groups discouraging fish consumption should not be overlooked. Other groups are reluctant to each fish just because they prefer other sources of animal protein food such as beef or chicken, although they have to pay more.

2.3 Problem Relating to Export and Import of Fishery Products

To maintain its economic development, Indonesia needs a lot of capital inputs, both local and foreign currencies. With its oil export reaching almost the maximum level, the Government is now aiming at non-oil products for the further increase of its foreign exchange earnings from export. Fishery products have been identified as one of the export items to be promoted in the years to come. Shrimp, skipjack and tuna are the main items exported but the world economic recession has adversely affect the export prices, especially for skipjack. On the other hand, with the gradual banning of trawlers since 1980 and which will cover the whole country starting 1983, other means of producing shrimp is contemplated.

Indonesia is now heavily depending on Japan for its export of fishery products. More than 75% of the foreign exchange earning from fishery products comes from Japan, with other countries far below that level, as can be seen from Table 12 attached.

The dependence on a too limited number of countries of destination is critical for the sustained growth of export of fishery products, which should be remedied as soon as possible. The same counts for the number of export items, where diversification is also urgently needed.

2.4 Problems Relating to the Control on the Utilization and Management of Fishery Resources

The enforcement of fisheries regulations in Indonesia is carried out by a coordinating body comprising the Navy, Marine Police, Customs Service, and Harbour Authority under the name BAKORKAMLA. The Directorate General of Fisheries has never been a member of BAKORKAMLA, and has only to submit its wishes and requirements to the body for implementation. Past experiences have shown that the fisheries' interests have not been taken care of satisfactorily by the coordinating body, mainly due to lack of understanding of the real actions needed, and partly because of lack of physical infrastructure.

With that situation, any effort to manage and control resources utilization according to certain policies and strategies could not entirely reach the goals. Consequently, social unrest among fishermen, clashes between fishermen groups, over-exploitation of resources, illegal fishing operations either by the use of destructive methods or poaching by foreign fishermen are often unavoidable, or are not sufficiently attended to. The gravest situation came when the development of trawlers, although limited by a licence system and zoning of fishing grounds, was regarded as to be out of control. The consequence, was the banning of trawl fishing starting 1 October 1980 as the first phase, and 1 January 1983 as the last phase.

3. CURRENT DEVELOPMENT PROGRAMMES

The major issues encountered as has been elaborated in the previous chapter revealed the problems and constraints which are faced in achieving the objectives of fisheries development. In fact many of them are being tackled as part of the development programmes carried out with the guidance of the Government.

Briefly the development programmes could be categorized into two groups, namely:

(1) programmes dealing with direct productive activities, and
(2) programmes dealing with the development of infrastructure facilities.

The first group covers fish capture, fish culture, fish processing and marketing, including the provision of production means needed, while the second group covers the provision of physical infrastructure such as fishing ports, irrigation canals, etc., and non-physical infrastructure such as research, education, training, etc.

3.1 Programmes Dealing with Direct Productive Activities

Fish production, processing and marketing are basically functions of the private sector, either the small-scale or the large-scale operators. In Indonesia, besides the

private sector, some State fisheries enterprises are also dealing with direct productive activities. In this case the State fisheries enterprises have the functions of:

- acting as a pioneering enterprise in utilizing fisheries resources which does not yet attract private investment;

- acting as an agent of development for the small-scale fisheries according to nucleus estate smallholder (NES) principles.

On the other hand, to augment the small-scale fisheries, the fishermen and fish-farmers are organized into cooperatives.

In the marine fisheries sector, the programme is primarily directed to create a favourable condition fot the rational utilization of resources throughout the country. This programme covers both the development of the small-scale fisheries and the large-scale industrial fisheries. At the initial stage of the programme in 1968, when the whole Indonesian economy was in a very bad shape, first priority was given to inviting private capital investment to stimulate the fishing industry, especially in areas which are not yet covered by the small-scale fisheries.

The enactment of the Foreign Capital Investment Law in 1967 and the Domestic Capital Investment Law in 1968 support the programme quite well. The number of joint venture enterprises established under the Foreign Capital Investment Law has reached 23 in 1981. from this number 16 are operational with a total capital plan of US$ 113.5 million, of which US$ 64.5 million has been invested. The number of enterprises established under the Domestic Capital Investment Law has reached 26. Eighteen companies are already operational with a planned capital equivalent to US$ 76.8 million, of which US$ 35.2 million has been invested.

Both the joint venture and domestic enterprises mostly engage in integrated shrimp fishing operations; processing of shrimp bought from the small-scale fishermen and fishfarmers; and skipjack fishing. With the banning of trawl operation in all Indonesian waters, the fishing enterprises engaged in trawl fishing are suggested to change their trawl nets into other fishing gears , particularly to fish in the EEZ for tuna and skipjack or even shrimp if found feasible.

Besides the private joint venture and domestic fisheries enterprises, the Government established six State enterprises, mainly as pioneers in tuna skipjack fishing, and as nucleus estates in fish marketing. The establishment of the State fisheries enterprises were assisted by international aid. The total foreign loan received was US$ 37.4 million. Besides of that the State enterprises obtained domestic loan and equity from the Government equivalent to US$ 21.2 million. In the meantime some of the State enterprises have expended their investment, either from their own resources or from additional loan from abroad. This is particularly directed to intensify resource utilization in the EEZ and to promote export of fishery products.

The programme for the development of the small-scale fisheries started in 1974, when for the first time a small-scale credit scheme was introduced by the Government. The credit scheme covers both investment credit and working capital credit. For the fisheries sub-sector it covers marine capture fisheries as well as aquaculture fisheries. For the marine capture fisheries the credit was intended for building new boats of up to 7 GT, while for the aquaculture fisheries the credit was intended for intensification of brackishwater and freshwater ponds, and extensification of brackishwater ponds. A total of Rp. 7 647 million of investment credit and Rp. 1 484 million of working capital credit has been allocated to all those activities up to 1981.

Besides of that, World Bank loan was also provided to small-scale fishfarmers for the intensification of their ponds. A total of US$ 20.3 million has been allocated up to 1981 covering intensification programmes of 18 268 hectares of fish ponds. A new loan is being prepared with the Asian Development Bank (ADB) for the intensification of some 15 800 ha of brackishwater ponds. The loan will include the rehabilitation of 280 km of irrigation canals, the construction and operation of five shrimp hatcheries with a capacity of 40 million shrimp fries per year for each hatchery. The total development will cost US$ 48 million, including Government counterpart funding.

Since banning of trawl fishing in Indonesia in 1980, the Government introduced a new credit scheme with very easy terms and conditions. It is called the Bimas credit, in line with the mass guidance credit extended to rice farmers long before. The Bimas credit has the main objective of developing the small-scale fishermen who has suffered most when the trawlers were still in operation, and the development of brackishwater fish culture, especially for shrimp to counterbalance the loss of shrimp production from trawlers and to boost export. Up to 1981 a total of Rp. 56 250 million has been allocated and Rp. 43 675 million has been disbursed covering 21 120 fishermen and 2 594 fishfarmers. For 1982-83 a total Rp. 49 252 million is allocated, covering the construction of 4 397 fishing boats up to 10 GT, and 18 420 ha of fish ponds.

3.2 Programmes Dealing with Infrastructure Facilities

To support the development of the marine fisheries, the Government has constructed 24 fishing ports and rehabilitate 144 fish landing places throughout the country since the Second Five Year Development Plan started in 1974. The construction of the fishing ports has the main objective of facilitating the development of the potential areas outside Java; and to provide better facilities for the operation of bigger fishing boats; and to provide better marketing, preservation and processing facilities, including supply of ice, coldstorage, etc. One of the fishing ports, the one located in Jakarta which is intended to accommodate fishing vessels up to 1 500 GT for deepsea fishing, is financed with a Japanese loan. Most of the new fishing ports outside Java are also intended to facilitate transmigration of fishermen and fishfarmers from Java. The rehabilitation of the fish landing places has the objective to give better service to the small-scale fishermen, both in berthing their vessels and in marketing their catch.

To support the development of brackishwater culture fisheries, the Government has constructed and rehabilitated 465 km of irrigation canals up to 1981. This is essential because the salinity of the brackishwater ponds can only be controlled sufficiently if the supply of both freshwater and seawater can be controlled anytime. With the assistance of the United States of America a study for developing irrigation canals which can cover 26 000 ha of brackishwater ponds has been finalized. Construction will partly be covered under a new ADB loan for brackishwater pond development.

Non-physical infrastructre is provided by the Government in the form of research, extension and training. Research programmes are mainly directed to the development of better production techniques, both for capture and culture activities, and also for post harvest activites. Resource research and surveys are directed to identify new potential fishing grounds and to monitor the state of the fishing ground under exploitation by the existing fisheries. Several multilateral and bilateral technical assistance were and are being received to strengthen the programmes in this field.

To step-up the technical and managerial abilities of the fishermen and fishfarmers, the Government conducts extension and training programmes. For the fishermen the programme is geared to the training of better techniques of fish capture, and the training of skippers and engineers to obtain the required certificates. Mobile training units are used to cover the fishermen in their respective villages, and permanent training centers are used to train more advanced fishermen.

For fishfarmers the programme is geared to obtain more advanced techniques with respect to pond construction, proper utilization of pesticides, fertilizer artificial feeding, water management and stock manipulation. The programme is carried out with the aid of demonstration ponds, or at permanent training centers.

The Government also provides fish hatcheries in potential areas to supply better strains of fish fry or breeders at low-cost.

For fish processors the programme is geared to improve fish handling and processing, including better sanitation in their processing plants. Quality control laboratories established in almost every province provide assistance in carrying out extension work in this field. The quality control laboratories also issue certificates of quality for fisheries products intended for export.

Technical assistance either multilateral or bilateral has been received for training and extension in fisheries since 1972. An extension project for small-scale fishermen and fishfarmers is still on going covering five provinces on a pilot basis. The project is assisted by FAO/UNDP and has a duration of four years. The expansion of the project to cover the whole country is felt timely to support the acceleration of fisheries development during the years to come.

4. MAIN REGULATORY MEASURES TAKEN OR CONSIDERED FOR MANAGING DOMESTIC FISHERIES

Compared with the rapid development achieved by the fishing industry since the First Five Year Development Plan, fisheries legislation has been lagging behind, in the sense that it cannot cope completely with the present needs. This is particularly the case in marine capture fisheries, where the existing regulations are inherited from far before World War II (1927) when fish capture was only confined to coastal waters using only sailing and peedled proas with very limited reach.. The development of powered vessels with their almost unlimited mobility to distant fishing grounds has caused new problems which cannot be covered by the existing regulations.

To cope with the new situation, for the purpose of managing the domestic fisheries, including resource conservation and prevention of unfair competition between the different types of fishing operations, several new regulatory measures have been introduced, without changing the old basic law.

Based on geographic, hydrographic and demographic conditions of the archipelago, combined with socio-technological considerations, the western shallow part of the archipelagic waters covering the Sunda Shelf is particularly reserved for the development of the small-scale fisheries. The eastern more deeper part consisting of the more oceanic waters and the remote Sahul Shelf is open for the development of the industrial fisheries.

Within the area reserved for the small-scale fisheries, the inshore waters are further devided into fishing zones parallel to the coastline. The first three-mile zone is closed for inboard motor fishing vessels of more than 5 GT or using engines of more than 10 hp. The second four-mile zone and the third five-mile zone are closed for inboard motor fishing vessels of more than 25 GT or 50 hp, and more than 100 GT or 200 hp respectively. The fourth zone outside the inner 12-mile limit is open for all sizes of fishing vessels. Besides subject to size and power limitations, the zones are also closed for certain fishing gears of certain sizes, regarded too effective for the respective zones.

Other regulations among others control the mesh size of the most effective fishing gears, such as trawls and purse seines. The use of explosives and poisonous substances for fishing is also prohibited by regulation. New regulatory measures are now being prepared. The first one is the new fisheries law which will replace the old law and will serve as the basis for further regulating all fishing activities. The second is the law for the management of the EEZ, which will cover the management of fisheries.

As mentioned before, the effectiveness of introducing regulatory measures lies in the system and mechanism to control their enforcement directly on the field competently. For that purpose preparatory measures are being taken to establish a monitoring, control and surveillance (MCS) system, under direct control of the Directorate General of Fisheries.

5. AVAILABILITY OF INFORMATION ON FISHERIES FOR THE FORMULATION OF FISHERIES POLICIES

Fisheries is an economic activity to utilize fisheries resources for the benefit of both the operators and the people in general. For a successful and sustained growth of fisheries development the following information are needed:

(a) state and potential of fisheries resources,
(b) socio-economic aspects of fisheries,
(c) cost and earnings of fishing operations,
(d) market intelligence.

Information on the state and potentials of fisheries resources is obtained through resource surveys for resources still little known, and through resource assessments supplemented with production surveys for resources under exploitation by certain fisheries. In Indonesia several surveys with external assistance have been carried out or are still underway. Surveys on pelagic resources in the Sunda Shelf were carried out under an FAO/UNDP assisted project from 1972 to 1976, while surveys on demersal resources covering almost the same area were carried out under a German assisted project at almost the same time. Surveys on both pelagic and demersal stocks in the Indian Ocean have just terminated under a joint project between Indonesia and Australia with the assistance of the Federal Republic of Germany and coordinated during the earlier stage by the Indian Ocean Fisheries Development Programme (IOP) and later by the South China Sea Fisheries Development Programme (SCSP). Another survey is still underway around the Natuna Islands and Sangir Island under a CIDA-Canada assisted project. The data obtained from resources surveys generally include: species composition, stock densities, distribution, catchability and catch rates, and environmental factors.

Resource assessments are carried out continuously using both special research/survey vessels or commercial fishing boats. Production surveys are carried out mainly through landing places and fisheries establishment, but for the bigger fishing boats the production is reported by filling out fishing log-books. The data collected by resource assessments cover: specification of fishing vessels, fishing ground, catches, species composition and size. Production surveys collect data on: volume and value of fish production by species and by fishing gear or type of culture, number of fishing boats, area under culture, fishing gear, number of households, number of fishermen and fish-farmers, production inputs, and disposition of catch.

The information obtained on the state and potentials of fisheries resources is still quite limited and insufficient. Resource surveys are still needed to cover the other areas not yet covered by past surveys. Stock assessment is felt the more insufficient, particularly to monitor the catch per unit of effort (CPUE). Also in determining the distribution and migration of stocks and the effect of exploitation by different fishing operations. This is particularly needed for the proper management of the multi-gear fisheries which cover most areas in Indonesia.

Socio-economic surveys have been carried out several times for marine capture fisheries, covering the most densily populated areas of north coast of Java, Malacca strait and west coast of South Sulawesi. For brakishwater culture, surveys have been conducted in Java and South Sulawesi, while for freshwater culture only in Java. Information collected covers: socio-economic structure, income levels, living standards, dependence on fisheries, production costs. It is felt that to be really useful especially to improve the lot of the small fishermen and fishfarmers, both the frequency of the surveys and the accuracy of responses still need to be increased and improved.

Cost and earning studies are needed to know the economic and financial viability of each fishing operation. These kind of studies have only been carried out superficially in conjunction with general socio-economic surveys. Market intelligence data are very scarce. Starting 1982, statistics on fish prices at the wholesale and retail markets will be collected and presented more specifically. Also data on inter-island and inter-province fish trade will be collected and presented as part of the fisheries statistics. With all that, it is admitted that still more and better information is needed to support the formulation of the most appropriate policies and strategies in fisheries development.

Table 1

Fisheries production by sub-sector, 1978-81

Unit: '000 t

Sub-sector	1978	1979	1980[a/]	1981[b/]	Average annual increase (%)
T o t a l	1 647.7	1 748.4	1 849.7	1 869.2	4.3
1. Marine fishery	1 227.4	1 317.7	1 394.8	1 387.4	4.2
2. Inland fishery	420.3	430.7	454.9	481.8	4.7
2.1. Open water	249.1	248.2	254.5	261.6	1.6
2.2. Culture	171.1	182.5	200.4	220.2	8.7
-Brackishwater pond	88.0	93.6	97.9	103.4	5.5
-Freshwater pond	57.7	59.4	66.4	73.1	8.2
- C a g e	0.4	0.4	0.6	0.7	21.5
-Paddy field	25.1	29.1	35.5	43.0	19.7

a/ Revised figure
b/ Preliminary figure

Table 2

Number of marine fishing boat, 1978-81

I t e m	1978	1979	1980[a/]	1981[b/]	Average annual increase (%)
T o t a l	248 113	257 905	271 856	274 200	3.4
Non-powered boat	222 121	225 804	226 866	225 600	0.5
Powered boat	25 992	32 101	44 990	48 600	23.2
- Outboard motor	13 226	17 343	26 523	29 700	31.9
- Inboard motor	12 766	14 758	18 467	18 900	14.0

a/ Revised figure
b/ Preliminary figure

Table 3

Area under culture 1978-81

Unit: ha

Type of culture	1978	1979	1980[a/]	1981[b/]	Average annual increase (%)
T o t a l	274 609	301 007	316 046	336 700	7.0
Brackishwater pond	171 544	181 792	188 601	192 400	3.9
Freshwater pond	35 553	39 785	38 501	41 650	5.4
C a g e	14	11	2	3	- 40.2
Paddy field	67 588	79 419	88 942	102 550	14.9

a/ Revised figure
b/ Preliminary figure

Table 4

Productivity of fishery production

Unit: kg

I t e m	1978	1979	1980 a/	1981 b/	Average annual increase (%)
Marine fishery					
- per fishing boat .	4,917	5,109	5,131	5,069	0.8
Culture (Inland fishery)					
- per Ha brackishwater	513	515	519	537	1.5
- per Ha freshwater	1,622	1,492	1,668	1,755	2.7
- per Ha paddy field	371	367	399	419	4.1

a/ Revised figure
b/ Preliminary figure

Table 5

Volume of export fisheries product, 1978-81

Unit: t

Commodity	1978	1979	1980 a/	1981 b/	Average annual increase (%)
T o t a l	63 485	68 264	78 705	85 110	10.3
Shrimp	32 620	34 743	31 934	25 906	- 7.4
Tuna/Skipjack	9 426	9 797	11 139	13 003	11.6
Marine fish, other	4 202	6 712	20 169	15 753	55.3
F r o g	2 325	2 657	3 612	2 748	5.7
Jelly fishes	1 860	1 436	1 474	2 063	3.5
Ornamental fish	359	399	473	365	0.6
Others	12 693	12 520	11 904	25 182	25.7

a/ Revised figure
b/ Preliminary figure

Table 6

Value of export fisheries products, 1978-81

Unit: Fob US$ 1 000

Commodity	1978	1979	1980 a/	1981 b/	Average annual increase (%)
T o t a l	193 424	236 827	226 354	231 090	6.1
Shrimp	161 955	200 483	180 904	170 130	1.7
Tuna/Skipjack	6 193	8 003	12 900	14 446	32.6
Marine fish, others	1 574	2 227	6 473	5 375	50.6
F r o g	6 236	7 134	4 754	9 547	15.3
Jelly fishes	3 982	2 651	2 908	3 302	-6.1
Ornamental fish	96	114	136	117	6.8
Others	13 388	16 165	19 179	28 154	28.1

Source: Central Bureau of Statistics
a/ Revised figure
b/ Preliminary figure

Table 7

Volume of import fisheries products, 1978-81

Unit: t

Commodity	1978	1979	1980[a/]	1981[b/]	Average annual increase (%)
T o t a l	27 099	31 018	39 517	58 989	29.6
Fish, processed (dried, salted, smoked)	36	16	92	20	-17.8
Fish, canned	7 528	2 202	1 763	1 080	-47.7
Fish oil	303	237	155	248	- 6.5
Crustaceans & Mollusca	21	44	52	97	66.6
Agar-agar	96	62	159	41	-24.7
Fish meal (unfit for human consumption)	18 948	27 957	34 194	50 341	38.5
Others	167	500	3 102	7 162	250.5

Source: Central Bureau of Statistics
a/ Revised figure
b/ Preliminary figure

Table 8

Value of import fisheries products 1978-81

Unit: t

Commodity	1978	1979	1980[a/]	1981[b/]	Average annual increase (%)
T o t a l	10,029	6,716	20,971	37,133	54.7
Fish, processed (dried, salted, smoked)	23	58	31	54	32.9
Fish, canned	6,662	2,105	2,438	3,429	-19.9
Fish oil	240	264	255	273	4.4
Crustaceans & Molluscs	88	264	194	780	106.9
Agar-agar	557	393	848	273	-21.2
Fishmeal (unfit for human consumption)	2,247	3,338	15,997	31,654	141.5
Others	212	294	1,208	670	46.8

Source: Central Bureau of Statistics
a/ Revised figure
b/ Preliminary figure

Table 9

Per caput income of fishing operator's household and fishing labourer's household in marine fisheries on the north coast of Java 1980

Scale of undertaking				Income/capita (Rupiah)
Fishing operator's household	T o t a l			126,500
	Small holder fisheries	Without boat		59,100
		With non-powered boats	Canoe	88,200
			Small boat	85,800
			Medium boat	132,400
			Large boat	125,300
		Outboard motor		362,200
	Medium scale fisheries	With powered boats	Sub total	1,033,500
			< 10 GT	279,300
			10 - 50 GT	1,027,400
			50 - 200 GT	3,259,800
			≥ 200 GT	18,766,000
Fishing labourer's household				65,000

Table 10

Per caput income of fishing operator's household and fishing labourer's household in brackishwater culture in Java and South Sulawesi in 1979

Scale of undertaking (Hectare)		Income / capita (Rupiah)	
		J a v a	South Sulawesi
T o t a l		62,100	131,570
Fishing operator's household	1	39,920	50,220
	1 - 2	45,930	84,160
	2 - 3	49,050	91,340
	3 - 4	58,840	103,110
	4 - 5	58,820	153,210
	5 - 10	89,650	185,370
	10 - 15	110,910	289,970
	15	214,020	484,300
Fishing labourer's household		37,860	55,270

Table 11

Per caput fish consumption by monthly *per caput* household expenditure groups in 1978

Per capita household expenditure group per month	Fish consumption/capita/ year (Kg)
1. ≤ Rp. 2,000	2.08
2. Rp. 2,000 - Rp. 2,999	6.00
3. Rp. 3,000 - Rp. 3,999	6.60
4. Rp. 4,000 - Rp. 4,999	11.96
5. Rp. 5,000 - Rp. 5,999	13.52
6. Rp. 6,000 - Rp. 7,999	17.68
7. Rp. 8,000 - Rp. 9,999	21.32
8. Rp. 10,000 - Rp. 14,999	26.52
9. ≥ Rp. 15,000	28.08
Average	11.44

Table 12

Export value by country of destination
1974 and 1980

Unit: Fob US$ 1 000

Country of destination	1974		1980	
	Value	%	Value	%
Japan	54 126	79.38	170 486	75.32
Singapore	2 859	4.19	19 835	8.76
U. S. A.	3 950	5.79	8 796	3.89
Netherland	1 732	2.54	6 103	2.70
Franch	52	0.08	1 550	0.68
Others	5 467	8.02	19 584	8.65
T o t a l	68 185	100	226 354	100

APPENDIX/ANNEXE I

Fisheries Profile of Iran

1. INTRODUCTION

The Persian Gulf covers an area of 239 000 km^2 and has a total length of coastline of about 3 200 km, of which Iran possesses 1 800 km - of which 470 km of them along the Gulf of Oman. Also another 900 km of Iranian coastline along the Caspian Sea, has made to the country great opportunity to relay not only on the economy of the oil resources which must be exploited more cautiously, but on the exploitation of marine fishery resources as well. Although the environmental conditions and traditional fishing methods in the aforementioned coastal regions are reasonably different, and the fisheries activities for many years have been carried out individually by two organizations, but the Islamic Government of Iran has determined to merge the two activities into one single body of the Ministry of Agriculture. The aim has been triggered toward adopting new measures of management and development.

Despite the considerable amount of underexploited fishery resources in the region, the present catches from the Persian Gulf and the Gulf of Oman has never been sufficient to answer the high demand of growing population of Iran. To overcome this deficiency, the Government of Iran has begun to strengthen the national fishery services in both sections of artisanal and offshore fishing, through the long-term development planning.

Considering the fisheries operation in the whole area, it should be pointed out that, the shrimp stocks had been intensively fished by the countries in the region during the past few years, while the other marine resources such as demersal and pelagic species of fish are underexploited. This is apparently due to the lack of regional coordination on resource monitoring and management between countries in the area. The Regional Fishery Survey and Development Project (RAB/71/278) conducted by UNDP/FAO was the first cooperative fishery project in the region with the aim of development of the fishery industries of the participating countries. The project was not fully successful in attaining all its objectives, although it has provided a sound basis of knowledge of resources in the area.

2. PRESENT SITUATION

The present total annual catches from the Iranian waters amounts to about 48 000 t/year. This includes 26 000 t/year of demersal species, 15 000 t/year of large pelagic species, and 7 000 t/year of small pelagic species. It should be noted that the actual fishing potential from the Persian Gulf and the Gulf of Oman, based on the fleet capacity and shore facilities would be about 54 000 t/year of which 6 000 t/year has been reduced as a result of the Iraqi imposed war in Iran. The above quantity of catch was supplied from the part of the Persian Gulf involved in war.

The shrimp fisheries at present suffers from the lack of stocks management in the area. The catch levels in Iranian waters have declined significantly from 4 040 t in 1976 to about 990 t in 1980. The amount of shrimp landed in 1981 and 1982 are 800 t and 700 t respectively.

The number of local fishermen and the size of artisanal fleet in four main fisheries coastal areas in the south part of the country is given in Table 1, and the total capacity of shore-based facilities in these provinces are given in Table 2.

The present fish food proportion out of total supplies of the country animal protein is less than 3.8% which is far from the actual demand. In order to raise this rate up to about 10%, within the next ten years, it will require to increase the amount of fish production about 480 000 t/year - attained by 1992. It would appear that additional supplies of fish food could be reached through a long-term planning in high-seas fisheries and technical development of artisanal fishing.

Table 1

Number of local fishermen and the size of artisanal fleet in Iranian fisheries areas

Area	Local fishermen	Number of traditional boat	Number of small boat
Hormozgan	5 199	705	756
Bushehr	3 379	405	429
Baluchestan	1 115	318	-
Khuzestan	5 000	400	-
Total	14 688	1 727	1 185

Table 2

Total capacity of shore facilities in the Iranian fisheries areas

Area	Cold stores (t)	Freezing (t/day)	Ice making plant (t/day)	Freshwater plant (m^3)	Fish meal (t)
Hormozgan	1 840	33	170	100	50
Bushehr	2 680	46	153	100	50
Baluchestan	1 830	50	70	100	-
Khuzestan	3 200	40	-	-	-
Total	9 550	169	393	300	100

3. DEVELOPMENT STRATEGY

3.1 Long-Term Objectives

Since fishery and its related industries can play an important role in providing a high proportion of animal protein, and since this can be an important factor in reaching economical indepency and self-sufficiency, the fisheries are given a priority equivalent to agriculture.

In order to accelerate the fisheries growth, in spite of insufficient information and statistics, long and short term development plans have been drawn up with the following objectives. Clearly these plans will be subject to changes as the new information arrive.

(a) Provision of some proportions of animal protein needed by the community as quickly as possible and as much as possible.

(b) Production of exportable products such as caviar, glue, shark leather, etc.

(c) Improvement of living conditions of fishermen by governmental investment in fishing cooperatives in coastal regions of Caspian Sea and Persian Gulf and Oman Sea.

(d) Setting up a solid organization to cover all aspects of proper utilization of aquatic resources in Caspian Sea, Persian Gulf, and Oman Sea as well as inland waters and fishfarming and research. Services to fishermen will be provided by coordination with the "rural service centres" to avoid duplication of the work in production and commerce.

(e) Utilization of modern and traditional fishing techniques to increase quality of production.

(f) Employment of technology compatible with the level of country's expertiese, for the purpose of principle of independency and giving priority to home-made machineries in order to protect them in spite of consequent delays in fisheries.

(g) Protection of traditional techniques against the industrial fishing techniques, in order to prevent the distruction of the traditional sector.

(h) Giving necessary priority to cooperative sector in aquaculture and fisheries's related industries.

(i) Utilization of dam reservoirs osiss, natural and artificial pools for aquacultures.

(j) Utilization of non-agricultural lands for aquaculture of warm and cold water fish.

(k) Control and continuous inspection of exploitation, and the exertion of the essential policies for the control of excessive catches in order to conserve the aquatic resources, specially in Caspian Sea.

(l) Study and assessment of aquatic resources of Caspian Sea, Persian Gulf, and Oman Sea for catching and obtaining new resources.

(m) Enhancement of the level of technology in the existing traditional fisheries so as to increase the catch as well as the income of fishermen.

(n) Increasing the efficiency of existing manpower, educating and training the required manpower.

(o) Developing industries related to fisheries, processing, shipbuilding, net and rope manufacturing, etc.

(p) Helping to accelerate the opening of a college of marine science with the membership of Iran fisheries department in its top council.

3.2 Planning

A five-year fisheries development plan has been set up to achieve a total production of 230 000 t/year, of which 130 000 t will be provided by offshore (industrial) fishing. The estimation of fish catch increase of artisanal and industrial fishing by the year 1987 has been planned and given in Table 3. An increase of about 33 000 t/year of fish meal production has also been estimated dirung this period. Table 4 shows the estimated rate of fish meal production for individual year.

Table 3

Increase of fish food production by 1987 (values in '000 t)

Type of fishing	1983	1984	1985	1986	1987
Artisanal	48	58	69	83	100
Offshore (industrial)	17	28	48	78	130
Total	65	86	116	161	230

According to the final report of the Regional Fishery Survey and Development project, about 750 000 t/year has been estimated as a total potential yield of both demersal and pelagic resources of the Persian Gulf and the Gulf of Oman. Since it has been found that the amount of resources are more concentrated in the Iranian shores rather than that of the other countries in the region, therefore the possiblity of catch up to 400 000 t/year within next 10 years is considered.

Table 4

Increase of fish meal production by 1987 (values in t)

Type of production	1983	1984	1985	1986	1987
Shore-based	3 200	3 900	4 600	5 500	7 000
Factory-ship	3 400	5 600	9 400	15 600	26 000
Total	6 600	9 500	14 000	21 100	33 000

4. RESEARCH AND TRAINING

The Scientific and Technical Fisheries Research Institute associated with the Persian Gulf Fisheries Co. of Iran, which started its activities in 1976 by participating in a few national fishery research project runs at present two research centres in coastal areas in Bushehr and Bandar Abbas. The Institute has intended to provide some information needed for fisheries development programmes, through the study of fish stocks, environmental conditions, and fishing grounds to be employed by the executive authorities. The research programmes at present involved in preliminary studies of shrimp stocks, investigation on various methods of tuna fishing, their distribution and behaviour, and preliminary studies on the possibility of shrimp capture. The prospective projects undertaken by the Institute are as follows:

- the continuations of investigation on the Persian Gulf shrimp stocks for the purpose of acquiring more information about the nursery and fishing grounds, as well as the distribution of various species;

- investigations on determining the most suitable methods of utilization of by-catch to provide fisheries by products;

- preliminary studies on determining the efficient methods of exploitation of small pelagic resources;

- survey on methods of catch and utilization of shellfish.

A long-term national development plan in education has also been set up to provide qualified manpower in various field of fisheries industry. The training courses will take place in fishing technology, food technology, navigation, refrigeration, port and harbours, engineering and resources management. These training courses take the form of fellowships for study abroad as well as national programmes run by universities. Provision for the establishment of a national fisheries training centre has also been made to provide the professional and technical manpower required for the future development plans.

5. CONCLUSION

The most serious constraints on fisheries development facing the country is the lack of adequate statistical information needed for effective inputs to development planning. The lack of qualified technical manpower also constitutes a constraint on fishery development. However, it can be said that the fisheries development in the Persian Gulf and the Gulf of Oman require more accurate information on living resources of the area, stocks monitoring and management, and permanent coordination of fisheries activities between the countries of the region.

APPENDIX/ANNEXE J

Situation and Outlook for Japanese Fisheries

1. INTRODUCTION

Japan is a fish-eating country surrounded on all sides by the sea. Our waters are a confluence of both warm and cold currents, thereby providing one of the world's best fishing grounds.

favoured by these geographic conditions, we have over the years developed a thriving fishing industry. In fact, coastal fishing grounds around Japan were already being fully utilized more than 100 years ago. As Japan modernized, its fishing vessels were motorized, fishing gear and equipment were improved, and the industry evolved on sound entrepreneurial lines. The result is that today all types of fisheries are found in Japan.

In coastal waters, for example, our fisheries are directed at abundant species, involving mainly small-size vessesls, set nets, squid jigging, and aquaculture.

In offshore waters, our fisheries are directed at both pelagic and groundfish resources, conducting relatively large-scale operations based principally on seines and trawls. Distant water fisheries operate in all of the world's oceans, using many types of fishing methods, i.e., large-scale trawl operations directed at ground fish, pole and line at skipjack, longline at tunas, and gillnet operations targetting salmon and other species.

Japan's fisheries produce a total annual catch of some 11 million tons, comprising some 15 percent of the total global catch.

Fishery products are deeply embedded in the diet of the Japanese people. We consume a wide variety of products - sashimi (raw fish), dried fish, salt-preserved fish, smoked fish, such as kamaboko (fish paste cake), and canned fish. Fishery products account for some 50 percent of Japan's total animal protein intake, a level of demand that is seen in no other country.

The value of Japan's fishery production is about US$ 12 billion per year, while some 460 000 persons are employed in our fishing industry. For Japan, therefore, fisheries are an extremely vital industry in terms of both food supply and employment opportunities.

2. CURRENT PROBLEMS

One serious problem plaguing Japan's fisheries is related to the worldwide trend toward the establishment of 200 mile fishing zones, as a result of which our distant water fisheries have been gradually losing their fishing grounds.

Japan has been negotiating with many countries in an effort to preserve its fishing grounds. With the loss of a portion of its grounds, our industry has sustained heavy economic damage, as evidenced by the idling of vessels and the discharge of crews. At the same time, fishing fees are reaching prohibitive levels in terms of the ability of our vessels to continue operations.

Certain coastal States, with a view toward developing their own fisheries, have turned away from the principle of effective resource use and are insisting on a linkage between catch allocations and foreign trade matters, which are not directly related.

We ask you to bear in mind that the Convention of the Law of the Sea clearly incorporates the concept that a country's traditional fishing operations are to be respected by coastal States, while economic dislocations to a particular fishing country are to be held to a minimum by coastal States.

However, understanding the wishes of coastal States, Japan has cooperated with these States in the scientific management of fishery resources while seeking to be able to

sustain distant water operations and thereby provide the Japanese people with proteins and preserve employment opportunities for our fishermen. We hope to be allowed to continue stable operations in the waters of coastal States under the mantle of cooperation with these States.

Another major problem affecting our fisheries involves the operating environment - that is, the operating problems arising from the rapid escalation in fuel costs and the stagnation of fish demand in Japan.

As a result of two oil shocks in an around 1980, the price of fuel, a vital factor in our fishery operations, has risen some seven times in recent years, as against an increase of only 2.5 times in fish prices over the same period. This combination of circumstances has put our industry under very severe economic pressure. And the recent weakness of the yen has made matters even worse by causing a further increase (in yen terms) in fuel costs. Of course, this matter of fuel price inflation is a problem all countries share in common, one which we must all seriously cope with.

3. JAPAN'S FISHERY POLICIES

With a view toward maintaining harmonious relations with coastal States, the Japanese Government has appropriated an annual budget of some US$ 30 million (1981) (Yen 7.5 billion) for capital assistance to fisheries in developing countries. In addition, our industry has, on its own initiative, been engaged in a programme of assistance, under which fishing experts are dispatched and fishing equipment is provided to help develop the fishing industries of coastal States. We intend to continue these development assistance programmes to the best of our ability.

As a means of countering the rapid increases in fuel coasts, we have been carrying out a programme of energy conservation keyed to the concept of "redevelopment" of conservation technology. For example, in the tuna fishery, we have been able to reduce energy requirements by streamlining vessels shape, cutting down on speed, and attaching large-diameter propellers.

In order to sustain fishermen's incomes with a minimum of price increases, we have adopted a policy of increasing the value-added of fishery products. A key element in this programme has been the development of new products. For example, we have developed a kamaboko (fish paste cake) using red fish (sardines and mackerel) - low-priced species taken in large volume from our coastal waters - as a raw material in place of the traditional Alaskan pollock. The red fish product is fully comparable in quality to the traditional product.

We have been making efforts to breed usable species in large volume. We have also been striving to maintain and augment resources through the release of young fish to the open sea. This represents in effect the introduction of an agricultural approach to fisheries, involving seeding, growth of plants, cultivation, and harvesting. We like to call this concept a "creative fishery".

In the case of salmon, for example, in 1975 only 40 000 t to 60 000 t of fish returned to our waters but, as a result of technical improvements in cultivation, the volume of returning fish in 1981 totalled more than 100 000 t.

"Creative fishing" also targets sea bream, prawns, and abalone and is being considered as well for such species as flounder and tuna.

Through the above outlined policies, Japan is seeking, via a programme of technical cooperations, to assist in the development of fishing industries throughout the world.

APPENDIX/ANNEXE K

Fisheries Profile of Kenya

1. GENERAL

In 1981, a total of 57 352 t of fish was landed by the local fishermen who earned approximately K.Sh. 164 million. This was an increase in landing of 18.9% over 1980's landing of 48 218 t. This increase was mainly due to high recorded catch from Lake Victoria (Kenya). The retail value was estimated to be K.Sh. 449 million, which is about three times the value paid to the fishermen.

Freshwater fish is still dominant with an upward trend. Freshwater fish landings contributed 89.6% of the total catch and marine fishery contributed 10.4%. Lake Victoria continued to be the leading landing source followed by Lake Turkana, the Marine fishery, Baringo, Naivasha and the other smaller lakes like Jipe, Chala and Kenyatta respectively.

Freshwater fish landing was 51 385 t; *Lates niloticus* had the highest record, followed by *Engraulicypris*, *Tilapia* (various species), *Haplochromis*, black-pass, *Bagrus*, trout and *Protopterus* respectively. The rest of freshwater species had a record less than 300 t. For marine fish, demersal species lead with 5 546 t, followed by crustacean species (384 t), molluscs (25 t) and miscellaneous (which include oyster grit and beche-de-mer) respectively.

The high catch recorded during the year under review can be attributed to improved staff efficiency and the increase in the number of private companies operating shrimp trawlers in the Kenya marine waters.

The following symbols have been used in the tables:

- Nil
ϕ Less than half of the unit shown
(About K.Sh. 10.98 is equivalent to US$ 1).

2. LAKE VICTORIA

The Lake continued to lead in the total production, landing a total of 38 179 t that reached an estimated value of K.Sh. 85.3 million for the local fishermen. This landing indicate a rise of 41.85% over last year's (1980) landing. This increase was attributed to the increase in number of fishermen from 18 000 in 1980 to 19 500 registered in 1981.

On particular species, *Lates niloticus* overtook *Engraulicypris* in production with a total of 22 834 t which accounted for 59.8% of the total landing, followed by *Engraulicypris* 20% and *Tilapia* (various species) 10.2% in that order.

Naya beach landed the highest catch with a total of 990 t followed by Kendu-Bay and Misori with a landing of 513 t and 393 t respectively. For the prices, Dunga beach was the most expensive averaging K.Sh. 3.91 per kilo of fish, followed by Karungu and Marenga at K.Sh. 3.53 and K.Sh. 3.28 respectively.

Of the total catch 19 987 t (53.4%) was used in fresh form and the rest was processed. Out of the total landing 1 490 t (3.9%) was consumed locally, where as 36 689 t (96.1%) was marketed.

Finally, a graphical representation of the various species for the year under review, portrays that *Lates niloticus* is increasing while other species are decreasing drastically.

3. LAKE TURKANA

Landings from Lake Turkana dropped from 12 384 t in 1980 to 10 529 t in 1981. Mainly this drop came about due to the following two reasons:

(a) in Loiyangalani, there had been a cholera outbreak from the month of February to May, 1981, thus brought out the closure of all fishing activities in the area by the authority concerned;

(b) severe draught as from the middle of the year under review lowered the lake level, a factor that interfered with the fish breeding grounds;

(c) there was a reduction of fishing canoes. The canoes which were not safe to operate in the lake were all grounded, a factor which limited fishing activities.

Lake Turkana fish consists of mainly tilapia and Nile perch. The catches were mainly consumed in cured form, i.e., either sundried, dried salted or smoked however a small quantity of fresh fish was consumed locally some bought by fish traders in fresh form and transported to Nairobi.

Turkana fishermen cooperative society bought most of the fish landed. Fish prices hiked as from the middle of the year. The quantity of the fish landed in the year under review was valued at K.Sh. 10.8 million to the local fishermen.

4. LAKE BARINGO

A total of 467 t of fish valued at K.Sh. 617 000 was landed around the lake. This was 56 t increase compared to previous year's (1980) landing. The filleting factory situated just at the shores of the lake bought 162 t of fresh tilapia. Other species (*Clarias* and *Barbus*) were sold to traders who processed and sold them out of the area. The landing trend from this Lake has been fairly steady for the last five years.

5. LAKE NAIVASHA

Lake Naivasha landing dropped from 477 t in 1980 to 269 t in 1981. This was valued at K.Sh. 2.5 million to the fishermen. Most of the catch comprised tilapia and little quantity of black-bass. The catch for cray-fish during the year under review was very small compared with the previous years. The drop in landing from Naivasha for the year under review can be attributed to the fact that most of the northern part of the Lake is covered by *Salvinia* and very little, fishing is done in this part. Once a solution to reduce or fully control the *Salvinia* is found, landings from this Lake will go up.

6. RIVERS AND DAMS

Of the expected production of over 4 000 t from rivers and dams, only 340 t valued at approximately K.Sh. 1.0 million was recorded. This is an increase over 1980, but a much higher figure is expected once statistics from all existing dams and rivers in the country are throughly covered and submitted to appropriate stations. Out of the 340 t recorded, Tana River has a landing of 301 t, Kamburu dam 24 t, Masing a dam 9 t, Gitaru dam 5 t and Kindaruma had 1 t.

Inaccessibility of some of the fishing areas along rivers by the fisheries staff is another factor contributing to the poor recording for rivers and dams.

7. FISH PONDS

A total of 421 t of a large quantity of trout and a certain amount of carps and Tilapia species valued at K.Sh. 23.75 million was recorded from farmers. This is far below the expected production of 5 000 t besides being a decrease over 1980's recording.

On average a kilo of trout was sold at K.Sh. 65.00 and that of other species sold at K.Sh. 16.50.

8. MARINE FISH PRODUCTION

Marine fish production continued to recover after the 1979 slump. A total of 5 967 t valued at K.Sh. 36.8 million were landed in 1981. This was an increase of 631 t

compared to 5 336 t landed in 1980. This could be attributed to the increase in the number of private companies operating shrimp trawlers in the Kenya marine waters. Another factor which contributed greatly to the increase was the deployment of two deep sea vessels by the Kenya Fishing Industries - which landed about 8.9% of the total production.

Demersal fish as usual continued to dominate the production, contributing about 47.4% and pelagic at 18.5% while crustacean contributed 6.4%. Sardines production continued to decline at 3.8%. Catch of prawns had an increase of 3 t, but once all the areas known for prawns are fully covered data wise a higher recorded catch is expected. Also once the Ngomeni Mariculture Project is in full operation, prawn catches will increase.

9. EXPORTS AND IMPORTS OF FISH AND FISHERY PRODUCTS

In 1981 the quantity of fish exported rose to nearly double those of 1980. A total of 1 460 t valued at K.Sh. 21.7 million was exported. With the marketing plan of diversifying fishery product types and improving on the quantity of such products, exports are expected to rise.

We mainly exported fish salted dried and smoked, crustaceans and molluscs frozen salted and dried. While the quantity of fish exported increased, the quantity of fish and fishery products imported decreased from 3 752 t in 1980 to 1 524 t in 1981. Like in the previous years Kenya imported mainly meals of meat offals, fish, crustaceans or molluscs not for human consumption. From Tanzania we imported salted, dried and smoked fish totalling to 16 t valued at K.Sh. 227 000.

During the year under review Kenya spent less on imports than it earned from exports. It exported fish and fishery products valued at K.Sh. 21.7 million while it spent K.Sh. 10.7 million on imports.

Fish landing by quantity and value - 1981

Fresh water:	t	'000 K.Sh.
Lake Victoria	38 179	85 346
Lake Turkana	10 529	10 849
Lake Baringo	467	617
Lake Naivasha	269	2 531
Lake Jipe	511	1 653
Lake Chala	207	591
Lake Kenyatta	174	439
Tana River	301	817
Fish ponds	421	23 747
Masinga dam	9	56
Kindaruma dam	1	3
Kamburu dam	24	87
Gitaru dam	5	18
Others	288	492
Total	51 385	127 246
Marine products: of which:	5 967	36 780
Demersal	2 831	13 371
Pelagic	1 103	7 650
Crustacea	384	6 763
Molluscs	25	133
Sport fishing	80	361
Miscellaneous	1 544	8 502
Grand total	57 352	164 026

Quantity and value of fish to fishermen 1979-81

	1979		1980		1981	
Fresh water:	t	'000 K.Sh.	t	'000 K.Sh.	t	'000 K.Sh.
Lake Victoria	30 592	57 095	26 914	58 805	38 179	85 346
Lake Turkana	13 731	11 177	12 384	9 601	10 529	10 849
Lake Baringo	326	498	411	560	467	617
Other lakes	585	1 069	1 849	4 864	1 180	3 175
Rivers and dams	113	296	251	466	340	981
Fish ponds	568	1 395	596	1 464	421	23 747
Lake Naivasha	483	2 621	477	3 429	269	2 531
Total	46 498	74 151	42 882	79 189	51 385	127 246
Marine fish:						
Lamu	917	2 371	1 384	3 912	1 393	4 764
Tana River	32	128	77	286	69	244
Kilifi	627	2 883	612	2 887	801	4 294
Mombasa	815	5 067	1 806	10 163	1 860	11 205
Kwale	404	1 761	648	3 196	810	4 534
Sport fishing	63	283	99	442	613	4 690
Area Uncc. for	-	-	279	2 231	-	-
Total	2 858	12 493	4 905	23 117	5 546	29 731
Crustaceans:						
Lamu	88	1 104	100	1 387	91	1 108
Tana River	6	49	5	46	8	66
Kalifi	28	418	47	675	40	636
Mombasa	78	1 616	197	4 154	180	3 794
Kwale	56	490	51	565	65	1 159
Total	256	3 677	400	6 827	384	6 763
Other marine products:						
Lamu	70	121	10	21	7	19
Tana River	4	9	-	-	-	-
Kilifi	122	336	8	17	10	26
Mombasa	526	2 092	6	121	10	198
Kwale	79	288	7	25	10	43
Total	801	2 789	31	184	37	286
Grand total	50 413	93 110	48 218	109 317	57 352	164 026
Retail value		299 623		316 902		449 002

Fresh water and marine fish catches by species
in quantity and value 1980-81

Freshwater fish:	1980		1981	
	t	'000 K.Sh.	t	'000 K. Sh.
Alestes	Ø	2	4	11
Bagrus	642	1 293	430	964
Barbus	521	2 357	451	1 785
Black-bass	18	145	4	39
Clarias	1 867	4 872	1 328	4 091
Engraulicypris	9 443	17 306	7 635	13 284
Haplochromis	3 636	4 328	916	1 599
Labeo	482	1 430	114	348
Lates	4 310	7 434	22 834	45 817
Mormyrus	333	514	209	460
Protopterus	595	1 842	323	899
Schilbe	117	266	49	138
Synodontis	388	910	127	320
Tilapia esculenta	90	338	139	548
Tilapia nilotica	1 184	4 927	1 858	8 523
Tilapia other	5 540	18 440	3 605	12 969
Trout	86	860	335	23 450
Cray fish	-	-	Ø	Ø
Carps	-	-	8	38
Eels	-	-	Ø	2
Unspecified	13 630	11 724	11 016	11 961
Total	42 882	79 037	51 385	127 246
Marine fish:				
Demersal	2 587	11 156	2 831	13 371
Pelagic	812	4 975	1 103	7 650
Sharks	163	441	186	601
Sardines	337	1 227	336	1 387
Sport fishing	99	442	80	361
Unspecified	907	4 876	1 010	6 361
Total	4 905	23 117	5 546	29 731
Crustacean:				
Spiny lobster	66	1 734	51	1 381
Prawns	226	3 894	229	4 118
Crabs	56	309	54	382
Others	52	890	50	882
Total	400	6 827	384	6 763
Molluscs:				
Oyster	1	38	1	48
Squid	8	30	10	42
Octopus	12	36	14	43
Total	21	104	25	133
Miscellaneous				
Turtles	-	-	-	-
Oyster grit	Ø	Ø	-	-
Beche-de-mer	10	81	12	153
Total	10	81	12	153
Total marine	5 336	30 128	5 967	36 780
Grand total	48 218	109 165	57 352	164 026

10. MARINE AND COASTAL FISHERIES IN KENYA

The total fish production from the Kenya coast in 1981 was estimated to be about 5 000 t. The catch was composed of demersal fish about 3 000 t, pelagic fish about 1 000 t, crustacea (prawns, lobster and crabs) about 500 t and miscellaneous marine products about 500 t. There was also a landing of about 500 t of deep sea fish caught more than 100 miles from the coast.

The bulk of the fish was landed by more than 12 000 artisanal fishermen using more than 3 000 small fishing crafts. The greatest fish production came from Lamu and Kwale districts of the coast. The main fishing centres were Vanga and Shimoni in Kwale district, Mombasa, Kilifi, Malindi, Ngomeni, Kipini, Lamu, Faza, Kisingitini and Kiunga. Majority of the fishermen depended mainly on the traditional fishing gears which included: set tangle nets (gillnets), beach seines (Juya), set traps (Malema) and the lobsters were caught either in the lobster pots or by diving.

The great proportion of the fish landed at the coast is consumed locally in the fishing villages by the fishermen and their families. The up country population are not familiar with and generally have no preference for more fish. There has therefore been little urge in the past for the coastal fishermen to intensify their activities for increased production. The major fishing centres are far removed from the main marketing centres wit population concentration. Most of the time the commercially viable fish catches are sold through several fish dealers who have established their own transportation and preservation facilities. During the rainy seasons, road communications to remove fishing centres are disrupted and the fishermen in these areas have no outlet for their surplus catch. During such periods fishing activities almost come to a standstill.

In order to assist the fishermen in the organization of fish marketing and distribution, formation of fishermen's cooperatives have been encouraged. Such societies have been established in Lamu district (North Coast Fishermen's Cooperative Society), Kipini, Malindi, Mombasa, Diani, Msambweni, Shimoni and Vanga. The most successful of these societies are the North Coast and Vanga Fishermen's Cooperative Societies. Each of these has a turn-over of more than one million shillings per year and the societies provide various benefits to members including payments of bonuses and dividends at the end of each year. These cooperative societies have ensured fair practices and reasonable returns for the fishermen from their catches.

The high value fish like crustacea (prawns and lobsters) and some pelagic fish like the kingfish are transported by the fish dealers to the main market centres such as Mombasa, Malindi and Nairobi and are sold to the consumers at very high prices. In some cases the price difference from fishermen to the consumer could be as high as 100%. Some of the valuable fish like prawns, lobsters and tuna are exported to overseas markets.

With assistance from various international and bilateral donor agencies a number of studies have been conducted to determine the extent and availability of fish stocks along the Kenya coast and in the adjacent deep sea areas. One of these studies in the inshores areas indicated that Ungwana Bay north of Malindi is capable of producing about 500 t of crustacea (lobsters and prawns) per year.

Studies conducted with the assistance of UNDP and FAO from 1974 to 1977 under the Indian Ocean Programme of the Indian Ocean Fishery Commission indicated moderate fishery potential for the Kenyan waters giving the optimum inshore fishery production of about 20 000 t per year. It was estimated that a reasonably equipped shrimp trawler should land as much as 3 t to 4 t of marketable crustacea per day. A closer study of the trawlable Kenyan coastal waters was conducted with assistance from FAO from 1979 to 1981. The results indicated good potential for trawl fishing in the inshore areas especially for crustacea with optimal landing of about 1 000 t per year from the entire Kenyan coast.

One of the major constraints hindering inshore fisheries development is lack of fish preservation facilities especially in the remote fishing centres. With assistance from the World Bank, it is planned to establish ice plants and cold storages in the main

centres to be used by the artisanal fishermen. The plants are to be built to cater for South Coast, Shimoni and Vanga and also in Lamu in the north. From these plants ice will be provided to individual fishermen for preservation of the catch before marketing, as well as to the insulated cold storages to be built in the surrounding fishing villages.

It is also intended to assist the fishermen increase their catches by introducing better designed fishing crafts. The fishermen will be helped to mechanize some of the fishing boats to enable them to get to the fishing grounds faster and also to land their catch within a short time.

In the improvement of the fishing gears and methods encouragement and allowance is being given to the introduction of small trawlers to exploit the resources available in the identified trawlable grounds. This development is being approached cautiously in order to avoid conflict with the large number of artisanal fishermen operating in the inshore areas.

The development in the inshore fisheries is expected to enable the fishermen to increase their production from 5 000 t to 20 000 t per year. Developments in the deep sea and offshore fishing areas were initiated in 1967 when the Government through a joint venture established a deep sea fishing company known as Kenya Fishing Industries Limited. The company was assisted to provide a modern jetty and a 2 000 t capacity cold storage. These facilities were initially used to process the deep sea catches landed by foreign fishing vessels which were operating in the East African region. Within one year of operation between 1971 and 1972 the cold storage had processed and transshipped about 10 000 t of tuna.

The on set of inflation in 1973 brought problems and most of the foreign fishing vessels stopped calling at the Kenya coast and discharging their catch through the cold storage. The facilities thus became progressively underutilized. A decision had to be made for the continuation of the activities of the deep sea fishing company.

It was decided that the company should acquire deep sea fishing vessels as had been envisaged when it was established. The Kenya Fishing Industries Limited thus organized to acquire two tuna longline vessels from Korea. Agreement was reached whereby experienced fishermen and crew were provided to train the local personnel. These vessels have operated well and have established a catch rate of between three to four tons of fish per day. It is expected that more vessels will be acquired in the near future if the modern cold storage has to be fully utilized.

For the purpose of increasing fish production from the coastal area a marine fish culture pilot farm has been established at Ngomeni near Malindi with assistance from UNDP and FAO. The farm is undertaking the culture of prawns and other marine fish such as milk fish and rabbit fish. When fully established, it will cover about 50 ha and should produce about 200 t of valuable fish per year.

APPENDIX/ANNEXE L

Situation and Prospects of Korean Fisheries

1. STATUS OF KOREAN FISHERIES

According to the Yearbook of Fishery Statistics (FAO, 1980) Korea's fisheries production was 2 102 204 t. This amount shared about 2.9% of the total world production and made Korea mark the ninth country in the world. The total production of Korean fisheries in 1981 has reached approximately 2 365 989 t which is about 112.5% of that in 1980. The percentage of production by fishery type showed that the coastal fishery was the most important one, covering 34.5%, and followed by offshore fishery (27.4%), deep sea fishery (22.9%), aquaculture (13.4%), and inland fishery (0.2%) (Table 1). The coastal fishery is the most important one, due to its highest production as well as its large number of fishermen.

Table 1

The composition of fisheries production

Unit: t

Fisheries	1972	1977	1980	1981	81/80(%)	1981(%)
Total	1 213 117	2 094 725	2 102 204	2 365 989	112.5	100
Coastal	540 352	752 692	803 593	817 437	112.5	34.5
Off-shore	341 002	494 552	566 731	648 128	114.4	27.4
Aquaculture	106 470	233 257	304 322	318 002	104.5	13.4
Inland water	1 158	25 777	39 111	40 065	102.4	0.2
Deep-sea	224 135	595 927	458 209	542 357	118	22.9

As for the offshore fishery, it is not clear that the production of the fishery increased recently. At one time the production of the deep-sea fishery increased rapidly, however, compared with that in 1977, it has the slow stride currently. Aquaculture showed an increasing tendency, gradually and it's production in 1981 reached 318 002 t, which was 4.5% increase of that of 1980.

2. SUMMARY OF LONG-TERM OBJECTIVES

The conclusive aims of the Korean fishery policies are the construction of welfare-fishing villages with the extention of infrastructure for fishery and the raise of income of fishermen. Additional objectives and procedures are as follows:

(a) to make the sea-ranch with propagation and multiplication of fisheries resources, and development of the inland water resources;

(b) to make safe fishing vessels, the extention of fishing port facilities should be performed;

(c) to raise the productivity of fishery, old vessels should be replaced and the developments of fishing gear and method should be studied;

(d) to maintain the production of deep-sea fishery, the cooperation with coastal countries should be strengthened;

(e) to extend the fishing areas, new fishing grounds should be exploited;

(f) to benefit both fishermen and consumers, the improvement of marketing system of fisheries products should be conducted;

(g) to aid fishermen face with the financial difficulties, monetary aids should be enlarged.

3. MAJOR ISSUES AND PROBLEMS

3.1 Stagnation of the Fisheries Production

Recently the production of the coastal and offshore fisheries has been stagnating in spite of the improvements of fishing gear and method and the increases of fishing efforts. It is worrying that some traditional and high-valued fish resources are over-exploited. Therefore, the adequate measures for the rational management of resources are requested such as, the readjustment of the number of fishing units, the limitation on the size of fish, the restriction on the type of gear, the closure of certain areas to specific fisheries and the closure of certain seasons, the limitation on the total catch on the basis of the scientific assessments of the relevant stocks.

3.2 Reduction of the Coastal Fishing Ground Including the Culture Farm

The coastal fishing ground has continuously been reduced as a result of the land reclamations for the industrial and agriculture sites. Moreover, the water pollution is the most serious problem. The immense materials discharged from the industrial complex and cities along the seashore spoiled very rapidly and extensively the environmental conditions of the coastal fishing ground. As a result of this, it occurs very often the red-tidal phenomenons in the coastal fishing ground including the culture farms. We try now to find how to protect and conserve the coastal fishing ground such as the designation of the clear waters and the protected waters by the establishment of the relevant laws.

3.3 Issues Derived from the Proclamation of the 200 Mile Exclusive Economic Zone

According to the recent proclamations of the 200 mile exclusive economic zone by the coastal countries, the possible fishing ground for the Korean deep-sea fisheries is considerably limited and losted. In order to find a way out of this difficulties, it will be desirable that the cooperation with the coastal countries should be strenghtened by supporting actively their fisheries development programmes through the mutual cooperations.

3.4 Socio-economic Problems

Nowadays, the oil price hikes influence seriously the management of the fisheries. In other words, the interest from the fisheries is considerably decreased as compared with the past times. So many employees have emigrated from the fisheries to the industry because of the more income and the more favourable labouring conditions.

4. MAIN REGURATORY ACTIONS FOR DOMESTIC FISHERIES

The Korean main regulatory actions for domestic fisheries are as follows:

(1) regulations by the fishery laws and ordinances for the conservation of resources:

(a) limitations on the specific fishing gear
(b) controlling on the mesh size
(c) limitation on the total amount of fishing powers and efforts
(d) closure of certain seasons and areas
(e) limitations on the minimum fish size
(f) limitations on the fishing activities of the eggs and larvae of specific fish
(g) prohibitions on the interception of the migrating route of the anadromous fish;

(2) designation of protected waters:

according to the Korean Fisheries Law, the protected waters are designated mainly on the spawning and the nursery area of the specific fish in order to conserve the fishery resources (e.g., three rivers and ten bays along the coast of Korea).

5. AVAILABILITY OF INFORMATION ON FISHERIES FOR THE FORMULATION OF FISHERIES POLICIES

The statistical informations on fisheries are officially collected by the Korean Government, for the purpose of the rational management of the fisheries resources, with the biological informations as follows:

(a) fishing household, fishing population and fishermen
(b) fishing vessels
(c) fishery production
(d) fishing household economy
(e) processed fishery products
(f) cooperative sales
(g) disposition of fresh fish
(h) export of fisheries commodities

The biological information are collected by the Korean Fisheries Research and Development Agency for the purpose of the assessment of the interesting stocks, as follows:

(a) size
(b) age
(c) maturity
(d) fecundity
(e) eggs and larvae
(f) abundance
(g) distribution and migration

APPENDIX/ANNEXE M

Country Statement: Malaysia

1. INTRODUCTION

Marine fisheries in Malaysia is a minor but important sector of the national economy. It accounts for 3.4% of the Gross Domestic Product and employs 2.3% of the national labour force. Being largely small-scale inshore fisheries, fishing operations are thus confined mainly within territorial waters. The fisheries here can be divided into four regions - namely, west coast of Peninsular Malaysia, east coast of Peninsular Malaysia, Sarawak and Sabah. Though the structure of the industry is quite similar in all four regions, they are however, distinct in the status of their resources and stage of development. As the following statistics will show, the west coast of Peninsular Malaysia has clearly the most developed fisheries. However, it is also the most intensely fished region in the country. The east coast of Peninsular Malaysia is less developed compared to the west coast and is also not so intensely fished as on the west coast. Sarawak and Sabah on the other hand are not only less developed as compared to Peninsular Malaysia but also less intensely fished.

1.1 Production

Malaysia's total marine landings in 1981 were 755 358 t of marine fish (including 68 911 t of cockles). The west coast of Peninsular Malaysia landed 433 371 t of marine fish (including 68 858 t of cockles) or 57% of total Malaysian landings. The bulk of these landings was landed by the following major fishing gears: otter trawls 199 934 t or 46% of total west coast landings, purse seines 77 995 t or 18% , drift gillnets 31 628 t or 7%, other seines 17 814 t or 4.1% and bagnets 15 768 t or 3.6%. The east coast of Peninsular Malaysia landed 215 944 t of marine fish or about 28.6% of total national landings during the same period. The main fishing gears responsible for these landings were - purse seines 81 267 t or 37.6% of total east coast landings, otter trawls 34 377 t or 16%, hooks and lines 24 116 t or 11% and drift/gillnets 33 325 t or 15.4%. Sarawak landings in 1981 were 68 043 t out of which 42 008 t or 61.7% were landed by otter trawls, 16 303 t or 24% by drift/gillnets, 4 445 t or 6.5% by bagnets and the balance of 5 287 t or 7.7% by a variety of minor fishing gears. Sabah marine fish landings in 1980 were 38 000 t which were landed mainly by otter trawls, drift/gillnets and fishing stakes.

1.2 Fishing Fleet

There were 44 851 licensed fishing boats in the country in 1981. Of these 25 365 or 5% were inboard fishing boats, 12 360 or 28% were outboard powered boats and 7 126 or 16% were non-powered boats. The bulk of these fishing boats were concentrated on the west coast of Peninsular Malaysia. Of the 21 849 fishing boats on the west coast the majority (12 472) were inboard powered. The majority of these inboard powered boats were less than 15 GRT powered by 40 hp engines or less. A sizeable number of boats in the 25-40 GRT range powered by 150-250 hp engines were also located here. There were 8 541 fishing boats on the east coast of Peninsular Malaysia the majority of which were also inboard powered (6 113) boats of less than 15 GRT powered by engines of less than 40 hp. During this same period 8 561 boats operated in Sarawak while 5 900 boats operated from Sabah. Though detailed statistics are lacking for Sarawak and Sabah, it is known that about 50% were also inboard powered boats of similar tonnage class as on the west and east coasts of Peninsular Malaysia.

1.3 Fishermen

There were 117 454 fishermen in the country in 1981. Of these 59 997 were on the west coast of Peninsular Malaysia, 29 928 on the east coast of Peninsular Malaysia, 12 529 in Sarawak and 18 000 in Sabah.

1.4 Utilization

The bulk of the marine fish landed was consumed locally, though a sizeable quantity was also exported. Most of the exports were the higher priced fish species and prawns which went chiefly to Singapore, Japan, USA and European markets. Trash fish landings were either used as manure or reduced into fishmeal. However, as domestic demand exceeds production, Malaysia is a net importer of fish in quantity terms although it maintains a surplus trade balance in value terms. The bulk of Malaysia fish imports comes from Thailand (fresh fish) and Japan (processed fish products).

2. DEVELOPMENT OBJECTIVES AND STRATEGIES

As fish in the most widely consumed form of animal protein in the country and as fisheries provide employment to a large number of the coastal rural communities, the production of fish to meet domestic demand and the generation of gainful employment will continue to be the prime objectives of fisheries development and management. Strategies to achieve these objectives include:

(a) the adoption and implementation of management measures to conserve the fish resources in the coastal waters through the regulation of fishing activities by type of fishing gear and class of fishing vessel, and the reduction of fishing effort;

(b) the up-grading of current technology to enable artisanal fishermen to venture further offshore to reduce fishing intensity in the inshore waters;

(c) the development of offshore fisheries in the EEZ by a combination of foreign and domestic capital and expertise;

(d) the integrated development of rural fishing communities, the establishment of fishermen association, and the provision of financial assistance, infra-structures and marketing services; and

(e) the accelerated development of aquaculture, especially in coastal areas, to provide alternative gainful employment to artisanal fishermen, and the relocation of fishermen in land development schemes.

3. MAJOR ISSUES

3.1 Inshore Fisheries

Assessments of the state of the resources indicate that the inshore areas traditionally fished are either overexploited , off the west coast of Peninsular Malaysia, or intensely exploited, off the east coast of Peninsular Malaysia, Sabah and Sarawak. This is supported by the trends in landings which during the last few years have levelled off or even declined. Overall the potential for increasing production appears to be limited to some less intensely exploited areas off Sabah and Sarawak where certain fisheries could possibly be further developed to enhance production.

3.2 Offshore Fisheries

The expansion of the fisheries beyond traditionally fished areas to offshore areas has not materialized even with the encouragement and support of the Government. The reasons for this seem to lie partly on the lack of appropriate tehcnology and skills, and partly on the inability to demonstrate convincingly the availability of commercially exploitable resources there. Nevertheless, there are a few commercially viable fisheries off the west coast of Peninsular Malaysia such as the bottom set portable trap fishery (mainly for snappers) and the troll-line fishery (mainly for little tuna and spanish mackerel) off the east coast of Peninsular Malaysia. More recently under a feasibility study venture conducted by a private Philippine enterprise off Sabah the Filipino fishermen have successfully demonstrated the ability to catch little tuna (skipjack) with purse seines using rafts as lures.

3.3 Foreign Fishing

Though foreign fishing vessels fish in the Malaysian EEZ yet it is observed that such fishing is conducted in areas traditionally fished by Malaysians or in areas offshore adjacent to such areas. This has led to competition for the resources, harassment of Malaysian fishermen and the destruction of their fishing gears. This concentration of foreign fishing activities in coastal waters casts further doubts as to the possibilities of developing commercially viable large-scale offshore fisheries. Resources surveys that had been carried out indicate that the resources diminish with increasing distance from the coast and the gross assessment of resources made have not provided the kinds of detailed information necessary for the development of fisheries. Unless such information is made available and the findings practically demonstrated it would be a slow and difficult task to convince fishermen to embark on offshore fishing.

3.4 Problems of Growth

The developments that had taken place in the inshore fisheries during the last decade and a half have brought problems rather than benefits to the small-scale traditional fisheries. This may be attributed to the deficiences in fisheries plans to provide for effective management programmes to regulate the growth of the fishery and development programmes to cater for the well-being of the small scale traditional fisheries during the early period of the growth and expansion of the trawl, in particular the mini-trawl fisheries.

The problems that prevail in the inshore fisheries are an excess of fishing units and consequently too many fishermen, intense fishing and hence competition for limited resources leading to declining catch rates and reduced incomes. These together with other constraints such as the limitation to development (improvements to fishing efficiency to increase production) in the inshore waters and the dependence on financiers (middlemen) for marketing, capital and credit have collectively contributed to the depressed socio-economic condition of the small-scale fishing communities. Programmes (though not altogether comprehensive for the lack of sufficient good information and in-depth knowledge) to redress this situation are being implemented because of the seriousness and urgency of the situation.

3.4 Marketing

Malaysia has a reasonably well established fish marketing system which though efficient, is traditional in character. The present system, evolved from the small-scale fisheries is virtually exclusively controlled by middleman. At every fish landing point there are collection agents who collect and grade the fish landed, pack them in ice and transport them to the major fish markets in the country and Singapore. In the bigger and better organized fish landing centres these collection agents charge a fixed percentum of gross sales for consigning the fish. Packing and transportation costs are however excluded from this percentum. In the smaller fish landing centres some of these collection agents buy the fish from the small fishermen for sale to the wholesale markets. Bulk of the fish landed is sold within 24 hours from the time it is landed.

There are, however, two main inherent disadvantages to the fishermen in this system:

(a) most of the collection agents in the fish landing centres are also boatowners, suppliers of fuel/ice and, also, the main source of credit. In this capacity they are in a position to dominate transactions. When the receipts of sales are received by them from the wholesalers, all costs like transportation, packing, consignment commission and supply of credit are deducted first before the money from the sales is given to the fishermen. Most of the time it is the fishermen who get the short end of the bargain;

(b) poor handling of catches results in significant post-harvest losses (not verifiable). Crude packing methods and transportation in non-refrigerated trucks often result in losses which are ultimately borne by the fishermen.

Most of the exports comprise the higher valued fish or prawns. The bulk of the fresh fish exports go to Singapore while prawns are mainly exported to Japan, the USA and the UK. The prawns are exported either in the fresh/frozen form or in the peeled/boiled frozen form. Most of the prawn processing is done by small factories where quality control is not strict and hygiene poor. As such there have been cases in the past when prawns have been rejected by importing countries. However steps have been taken to establish proper codes and standards to overcome such problems. With the establishment and subsequent enforcement of these codes and the service provided by INFOFISH to promote fish trade, the fish trade will improve to benefit both exporters as well as the importers.

The fact that the existing traditional marketing system is not beneficial to the socio-economic well-being of the fishermen has been recognized by the Government and steps had been taken through the establishment of a statutory body to improve the marketing system. However, due to lack of adequate market intelligence and the shortage of experienced marketing personnel, there has been no Government intervention in the market to establish and regulate a proper fish marketing system to date.

4. CURRENT DEVELOPMENT PROGRAMMES

The objectives and strategies described in the introductory section determine the national programmes for fisheries development and management. These programmes are implemented by two agencies, the Fisheries Division and the Fishermen Development Authority, of the Ministry of Agriculture. A brief summary of the programmes is:

Research: to assess and monitor the resources; rehabilitate exploited fishing grounds; to develop or adapt known technology for the mass production of fish seed; to develop fish feeds; and to improve or develop culture technology and practices.

Training: to upgrade the knowledge and skills of the fishermen to enhance productivity and to enable them to exploit resources in offshore areas; and to impart the knowledge and technical know-how on culture practices to fishfarmers.

Extension: to extend information through such means as publications, exhibitions, film shows and demonstration including study or observation tours; to provide advice and technical service and support in fishing operations and fishfarming.

Subsidies: in conjunction with the extension programme to provide machinery and equipment for fishing and facilities and materials for fishfarming; recipients are required to attend courses run under the extension programme in the use and maintenance of subsidy items.

Infrastructure: to provide fishery complexes which include landing facilities, auction halls, cold rooms, ice plants and packing halls at major fishing villages and simple landing jetties at minor fishing villages.

Fishery management: to regulate fishing and conserve and manage the resources consistent with national programmes fo the development and management of the fisheries.

Fishery project: to promote the development of offshore commercial (industrial) fisheries with foreign assistance or participation where local experience is lacking; to develop and manage large-scale aquaculture farms, comprising smaller family size units, for the relocation of fishermen in more gainful employment; to establish commercial hatcheries for fish seed production.

Marketing: to organize, undertake and regulate the marketing of fish; to provide market intelligence services; and to manage the fishery complexes.

Socio-economic: to organize fishermen into coherent (village) units to consolidate their position to facilitate development inputs for their socio-economic welfare; and integrated community development.

Physical facilities and the means, including expertise, training of agency personnel, surveys and feasibility studies, to carry out the development programmes mentioned above are being provided under the Fourth Malaysia Plan, 1981-85.

5. MANAGEMENT MEASURES

Prior to 1980 there were no clear cut strategies for the proper management of the fishery resources.

The management of the fishery resources had been on a problem oriented basis, that is reacting to the problems as they appeared. Using the same approach after the introduction of trawling resulted in a series of decisions being taken on a disjointed increment basis rather than within the framework of an overall plan for achieving optimum utilization of the resources. Another factor which led to and exacerbated this problem of lack of clear cut strategies for the management of the resources was the absence of sufficient good data base for the planning of management strategies.

Management and conservation controls in force then included a minimum mesh size for otter trawl net codend of 1.5 in, prohibition on the use of beam trawl nets for catching prawns, demarcation of the distance from the coast within which otter trawling was not permitted and on night fishing by trawlers under a certain size.

This lack of sound management strategies in the context of intense exploitation and overcapitalization led to the formulation of a management policy which was adopted in 1981.

The area of importance in the allocation of fishery resources is the inshore waters where the problem is allocation of the fishery resources between the highly efficient and mobile trawlers and the traditional fishing gears.

The Fisheries Licensing Policy, initially formulated to solve the problems arising from the conflict between the traditional fishermen and the mini-trawler fishermen in the inshore waters, now encompasses fisheries as a whole in marine waters under the jurisdiction of Malaysia and addresses itself to:

(a) the elimination of the competition and the ensuing conflict between traditional fishermen and mini-trawler fishermen in the inshore waters;

(b) the prevention of overexploitation of the fishery resources in the inshore waters;

(c) a more equitable distribution of fishing throughout the waters under the jurisdiction of Malaysia;

(d) the restructuring of the ownership pattern of fishing units in accord with the New Economic Policy;

(e) the promotion of the development of offshore industrial fisheries.

The main strategy employed is the allocation of fishing grounds through zoning. Four zones are established under the Policy. The first zone, from the shore to 5 miles from the shore, is reserved for (owner-operated) traditional fishing gears; the second zone, between 5 miles and 12 miles from the shore, is reserved for (owner-operated) trawlers and purse seiners less than 40 gross; the third zone, between 12 miles from the shore and 30 miles from the base-line of the territorial waters, is reserved for trawlers and purse seiners greater than 40 gross, and other fishing gears, wholly owned and operated by Malaysians; and foreign fishing, including joint-venture or charter, is restricted to the fourth zone which is between 30 miles from the base line of the territorial waters and the outer limit of the Exclusive Economic Zone.

The policy therefore has, to achieve the objectives enumerated in (a) to (e) above, established zones by type of fishing gear and size of boat, and ownership of the fishing unit ot ensure a more equitable distribution of fishing, fishing effort, ownership and benefits. Fishing effort will be further regulated through licence limitation in each zone to prevent overexploitation. In the first and second zones, fishing units not operated by the owners will be phased out and only fishing units operated by the owners will be permitted.

The management and conservation controls formulated also include a minimum mesh size for otter trawl net cod-end of 1.5 in internal extension measures and a prohibition on the use of the beam trawl and the pair trawl.

6. INFORMATION ON FISHERIES AND FORMULATION OF FISHERIES POLICIES

The planning process and policy formulation presently carried out are based on the limited global socio-economic indicators available. These indicators are by no means sufficient but they are adequate to gauge the extent of poverty and the profile of the fishermen and their community at large.

The basic socio-economic profile widely used as the broad guideline to policy formulation is as follows:

Poverty level. It has been estimated that some 45% of the fishermen-households areas are living below poverty line. This is a marked improvement in the economic standard of the households since the early 1970s when 73% of them were living below the poverty level. There is however a bigger concentration of the poor in the east coast of Peninsular Malaysia, where some 68% of them are poor. There is a lack of such information for Sabah and Sarawak.

Income level. The subject of fishermen's income is highly controversial due to the absence of sufficiently good data. The available data on the income level of the fishermen are from few isolated studies and not well documented. Admittedly the collection of income data is relatively difficult and governed by complex variables. Generally the respondents in any income survey are reluctant to reveal complete and accurate information and, in most cases, respondents have the inclination to understate their incomes.

Generally speaking, the average annual income from fishing is $M 2 747.00 or $M 230.00 per month. However, there are regional differences; the average for the east coast fishermen is $M 1 655.00 whilst that of the west coast is $M 3 302.00. There are several factors contributing to this wide difference. Primarily it is due to the low productivity of the traditional fishermen in the former region where the *per caput* output was 4.3 t in 1980 as compared to 8.3 t for the west coast. The national average was 7.0 t.

Income levels also vary according to gear groups. Differences between gears, in terms of capital investment, level of technology and fishing grounds lead to different productivity per boat/gear and therefore in income derived from them. Such sources of income-differentials are very significant between the more capital-intensive gears such as the trawlers and purse seiners on the one hand and the less capital-intensive traditional gears like gillnets, liftnets and hook and lines on the other hand. A case study has shown that the income of a crew of the gillnet unit is only 22% of that of a trawl unit.

Sources of capital. In the small-scale fisheries sector, the credit aspects of its fishermen are closely linked to their marketing aspects through the credit marketing relationship between the fishermen and the financier. It is believed that this relationship invariably leads to the former being exploited by the latter. The financier, who is also the local middleman, money lender, shopkeeper, boatowner, etc. manipulates his business transactions with the fishermen for his own economic gains, leaving the latter tied down to the monopolistic-monopsonistic power of the former. Although much has been said of the 'exploitative' nature of the economic functions performed by the financier as middleman, there are no data on the extent of exploitation of the fishermen. Neither is there any evidence on the level of indebtness of the fishermen to suggest that they are vulnerable to this phenomenon. Nevertheless, one of the primary concerns of the fisheries programme is to reduce this dependence on the financier.

Note: the poverty index is an income of $M 350.00 per month to sustain a family of 5.6 persons

Ownership of productive assets. Assets ownership is closely linked to the employment status of the fishermen and reflects their relative economic strength vis-a-vis non-fishermen in the rural economy. Any attempts uplifting the socio-economic status of the fishermen must take this into consideration. It has been widely recognized that the weak economic bargaining position of fishermen has enhanced their poverty. Productive assets can be classified into two broad groups: tangible fishing assets such as boat hulls, engine, gear, and tangible non-fishing assets mainly in the form of agricultural holdings. In the fishing community, two types of boat ownership exist:

(a) full ownership - a single fisherman owning all the main fishing items namely hull, engine and gear, and

(b) partial ownership - a fisherman may own either the hull and engine or the gear.

Accordingly, there is 24% full ownership, 10% partial ownership and 66% non-ownership among fishermen. This reflects their low investment capabilities.

Underlying causes - the existing state of poverty among the inshore fishermen is attributed to:

(a) lack of entrepreneurship and working capital in terms of boats and gears has hampered ownership and led to dependence on financiers, etc.;

(b) the confinement of traditional fishing gears to inshore waters where the resources are intensely fished;

(c) Low catch rates and low returns per unit;

(d) a state of redundant, and therefore underemployed labour especially of fishing crew who, for the lack of alternative employment opportunities, remain in the fishery;

(e) competition with the more efficient and commercialized operators not only for fishing grounds but also for markets;

(f) in the past the poverty problem has been widely discussed within the broad context of the overall fishing industry, and programmes implemented accordingly. However, there is a need now to direct attention and programmes to problems of specific locations. These specific locations are pockets of isolated fishing villages along the coastline where the socio-economic conditions and general standard of living of its population are below average.

7. INTERNATIONAL COOPERATION/AID PROGRAMMES

Malaysia participates actively in international and regional programmes including those organized by FAO, the SCSP, the BOBP, and SEAFDEC, and the ASEAN and receives assistance in the form of bilateral technical cooperation projects under the country UNDP/IPF fund, as well as under Canadian, French and British technical cooperation programmes. There are also bilateral technical cooperation agreements with Thailand and Indonesia.

These international, regional and bilateral programmes include feasibility studies, transfer of technology, policy projects, training and research in fields of fisheries where expertise within the country is lacking. The main objective of such arrangements is to provide the technical back up to the national fisheries development programmes.

Among the projects under international cooperation aid are the ADB's feasibility study for fisheries development for Sabah and Sarawak; FAO/TCP project in pelagic acoustic survey; FAO's mission to identify and recommend programmes for the development and management of the EEZ; various consultancy inputs from SCSP/FAO; the aquaculture development project in Ban Merbok under the BOBP, and the coastal aquaculture development and research project under the country UNDP/IPF sponsorship in Gelang Patah, Johor.

Malaysia also has bilateral technical cooperation projects with the United Kingdom for the training of extension workers; a pilot integrated fisheries community development project at Kuala Besut funded by the CIDA; and a crustacean aquaculture project with the French. Under the bilateral agreements with Thailand and Indonesia, there are provisions for exchange of experts, materials, training, and cooperative research. There has also been established an FAO market intelligence project, INFOFISH, in Malaysia to service the region.

SEAFDEC provides essential training for Malaysians in fisheries technology and aquaculture, whilst projects under ASEAN are now gaining momentum with the implementation of a post harvest handling project assisted by Australia and another post-harvest technology project with assistance from Canada, about to be implemented.

APPENDIX/ANNEXE N

Fisheries Profile of Maldives

1. INTRODUCTION

In the Maldives, fisheries provide employment for 44% of the country's labour force, and also provides one fourth of the national income.

The main fishery is of the tuna varieties and fishing is done by the pole and line method, using live bait. Long lining for sharks and trolling for reef fish is also practised on a small scale.

Fishing in the Maldives has always been artisanal. Most of the boatowners own a single fishing boat, very rarely two or three boats.

Mechanized fishing boats were introduced in 1974 by the Goverment in the form of providing and installing Yanmar 22 hp motors in the existing traditional fishing craft. This is being done under a scheme where the fishermen pay for the engines on an installment basis.

Fishing communities or villages are located on separate islands. In each of the 200 inhabited islands of the Maldives, fishing is done to a certain extent. But some areas of the country being more favourable for fishing, the islands around these areas are the better fishing villages.

The total catch of fish for the last five years and the present fishing fleet is as follows:

(weight in '000 t)

Type	1976	1977	1978	1979	1980
Skipjack	19.9	14.4	13.8	17.9	23.5
Yellowfin	4.8	4.3	3.7	4.3	4.2
Little tuna	1.0	1.0	0.8	0.7	1.1
Frigate and little tuna	2.7	3.1	1.9	1.8	1.6
Other marine fishes	3.9	3.5	5.6	3.0	4.2
Total	32.3	26.3	25.8	27.7	34.6

Fishing fleet 1980

Mechanized pole and line vessels	805
Sailing pole and line vessels	1 314
Sailing trolling vessels	3 405

The tuna and skipjack catch is mainly sold fresh, to purchasing vessels with freezing facilities. And this is exported frozen. There are three companies buying fish for freezing. Two are Maldivian and one is Japanese.

A very small part of the tuna catch is smoke-dried and exported to Sri Lanka. This drying is done as a cottage industry in the fishing villages.

The export of fish for the last five years is given below.

Maldivian fisheries policy has always been to expand and develop the traditional pole and line fishing. And in this direction, various projects have been designed to build up the fishery infrastructure and also introduce improved technology and equipment. And efforts are being made to give the fishermen their due status in society and improve the economic conditions of the fishermen.

Export of fish for the last five years

Year	Quantity '000 t	Value '000 Mal.Rs.
1976	15.9	11.8
1977	18.2	13.8
1978	17.3	16.1
1979	18.9	18.0
1980	22.7	28.8

2. MAJOR ISSUES

Although no assessment of stocks has been made in the country, fishery resources would seem to be more than enough considering present fishing methods used.

In contrast to the vast area of ocean available in the country's EEZ, fishing capabilities are rather low. This is due to the fact that only pole and line fishing is done, and that, too, by traditional small fishing boats with a catch capacity of around one or two tons.

In the traditional pole and line fishing which is practised in the Maldives there is very little scope for technology improvement. The only way to advanced technology in this field may be to introduce larger pole and line vessels.

As to marketing of frozen fish, from 1972 foreign companies have been making purchases in the fishing areas and the marketing has been done by them. Lately, two Maldivian companies have started purchasing fish for freezing. However, it is too soon to say if they face any marketing problems.

The dried variety of fish which is exported to Sri Lanka only has a very limited market.

The Republic of Maldives claims on EEZ of two hundred miles; but so far Maldivian fishermen have been using the inshore areas only for their fishing. In spite of this the fishermen find that their fishing is deteriorating, and poaching by foreign fishing vessels within the EEZ is blamed. Poachers have been sighted all around the country and in some instances poaching vessels have been sized by the authorities.

As our Minister for Fisheries pointed out at the 16th FAO Regional Conference in Jakarta last June this matter needs to be fully discussed and dealt with at the World Conference on Fisheries Management and Development that is to be held in 1983.

An also as our Minister stated at the Conference, more reliable ways to market fish has to be discussed at the World Conference.

We, as a small island nation, are greatly in need of international support in these issues.

3. DEVELOPMENT PROGRAMMES

Various fisheries development programmes are in progress at the moment. Following is a summary of the main on-going projects.

Project title	Activities	Funding Agency
(1) Maldives Fisheries Project	- Credit for 500 marine engines - Establishment of 5 engine repair centres - Installation of navigational lights	INTERNATIONAL DEVELOPMENT ASSOCIATION/ WORLD BANK
	- Skippers training - Improvement of fishing vessels - Introduction of long range vessels	UNITED NATIONS DEVELOPMENT PROGRAMME
(2) Fishwealth Exploitation Project	- Provision of a complete system of fresh fish collection and freezing in 5 southern most atolls	KUWAIT FUND FOR ARAB ECONOMIC DEVELOPMENT
	- Supply of fuel for the mechanized fishing boats	KUWAIT FUND FOR ARAB ECONOMIC DEVELOPMENT
(3) Utilization of FADs	- Experiment with anchored floating rafts to aggregate fish	TECHNICAL COOPERATION PROGRAMME/FAO
(4) Development of Extension Services	- To develop and train manpower for fishery extension services	TCP/FAO

4. REGULATORY MEASURES

Very few regulatory measures have been taken in respect of the skipjack fisheries. As the present policy is to develop the existing pole and line fisheries, regulations have been introduced prohibiting some types of fishing activities with migh interfere with this fishery. The main regulation prohibits the use of nets in the EEZ of the Maldives. There is another regulation to protect the reefs where live bait is collected for pole and line fishing. This rule bans the use of any kind of explosives around these reefs.

Trawling or purse seining has never been practised in the Maldives.

5. LACK OF INFORMATION ON FISHERIES

Very little research work has been done on fisheries in the Maldives. Foreign experts were invited at various times and their findings were published in reports. But these reports were not the results of real research, firstly because we did not have the necessary statistics available and secondly their periods of work in the country were short.

Planning for fisheries development is going on. In the meantime it is felt that collection of data and statistics on every aspect of fisheries is of utmost importance. Therefore at the moment attention is being given to the training of personnel to carry out this work on a systematic basis. An so a training project for fisheries extension workers in going on.

A fisheries stock assessment is urgently needed for any comprehensive fishery plan. So is research in the socio-economic aspects of the country's fisheries.

Further, market intelligence together with marketing know-how is greatly needed.

In every field of fisheries development and management the greatest need in the country at the moment is for suitable and trained manpower, without which we lag behing every developing country in the matter of fisheries development.

APPENDIX/ANNEXE O

Fisheries Profile of Nepal

1. INTRODUCTION

Nepal is a landlocked country of extremely complex and varied terrain. It lies between longitude 80°10' and 88°10' and latitude 26°22' and 30°10'N. It has a total area of 149 690 km. The geography ranges from the rugged arid peaks of Himalaya in the north, to the fertile tropical plains of the Ganges in the south. Nepal shares three borders with India (east, west and south) and one border (north) with China. The climatic change from east to west is not so pronounced while the climatic variation from south to north is very abrupt in response to the altitude (in the south 130 m from sea level to 9 802 m in the north).

Nepal is predominantly an agricultural country. About 94 percent of the total population (15.5 million) is totally dependent on agriculture. About two third of the GDP is derived from agriculture while 80 percent export commodities comes from agriculture sector. The livestock holding of the country is as high as 5.8 heads of animals per household but the livestock product is low because of unproductive breeds. Unlike the other animal meat, fish as a protein rich diet is acceptable to every level of the population and is in high demand. Previously, the demand of fish was met by domestic production while the major portion by import. Moreover, the domestically produced supplies had a major share from traditional capture fisheries from the natural waters. In recent years, steadily increasing culture fisheries have not only shared a major portion of domestic consumption but also have open a horizon of export to neighbouring countries in the higher price.

2. SCOPE

Nepal being a landlocked country, production of fish totally depends on proper utilization of inland waters.

Nepal has number of small to big perrineal river systems carrying about 40 percent of the Ganges water system. Small and medium sized lakes are scattered throughout the country (5 000 ha). Besides the natural water bodies, Nepal also has more than 5 000 ha of village ponds or tanks in warmer southern plains, 172 000 ha of irrigated paddy fields and about 500 ha of reservoirs for immediate aquaculture developments. The increasing trend of hydropower and irrigation projects further widens the horizon of aquaculture development in the country as up coming several hydropower and irrigation projects have a projection to add more 60 000-70 000 ha of reservoirs by the end of this century.

3. POLICY

In the national development policy, agriculture development has always fetched the highest priority. Considering the nature of resources of immediate use, recognizing the importance of aquaculture in improving the nutrition of the people through the increased fish production in a relatively short period and cheaper way as compared to the other sectors of animal husbandry and being a field to provide job opportunities to the rural people. His Majesty's Government has given considerably higher priority for aquaculture development.

Moreover, to accelerate the production programme in private sector, the Government has set up a priority order to develop action-oriented production programme with an integrated approach involving the small or landless fishfarmers from the beginning of the planning stage.

4. STATUS

Traditionally, the farmers used to either allow the flood water to enter in their ponds or used to collect the widely spawned fries from the rivers and stock them in their ponds. In this way farmers had to satisfy themselves even with the low and uneconomical production.

In the early sixties only the present practice of fish culture was initiated in the plain region of the country and is still in artisanal scale. For the rapid development of aquaculture, intensive fish culture programmes have been implemented with the high priority in the various potential parts of the country by mobilizing internal resources as well as external resources, e.g., FAO/UNDP. Realizing the importance of aquaculture, His Majesty's Government has recently implemented an Aquaculture Development Project under the loan of Asian Development Bank and technical grant of UNDP.

The project mainly deals with the promotional activities of pond fish culture in private sector. The project has further visualized to strengthen the public sector fishfarms to increase the pure fish seed production to coup the demand and to conduct the study work on the problems encountered by the fishfarmers.

Further, to make the farmer self-reliant in fish seed requirement and to make them benefited with the quick economic return from fish seed production, priority has been given to disseminate the standardized and simplified induced breeding technique in private sector. A considerable progress has been obtained in standardization of induced breeding technique and dissemination of the technique in private sector.

4.1 Fish Production

(i) Pond fish culture

The major portion of fish demand is met by pond fish culture though it is in small-scale. It has covered about twenty percent of existing pond water surface. Moreover, it is aimed to cover at least fifty percent of pond water surface to produce 3 500 t by the end of next year.

To maximize the production of fish with least inputs, integration of fish with livestock (duck and pig) has been adapted in the private sector. The combination of duck with fish along has helped to increase more than 10 percent of fish production along with 1 t of duck meat/ha/50-60 days.

The rapid growth of peking duck in limited time has shown very promising future to increase the production of duck meat by multiple cropping from the same water surface.

Similarly the combination of fish culture with pig farming has distinctly shown an increase of the fish production per unit water surface and also has drastically lowered the production cost by curtailing the input expenses of supplementary feed and fertilizer.

The integration of fish culture with livestock has further open the horizon to integrate even biogas to maximize the utilization of livestock wastages for generating power or to use the gas for domestic purpose. Moreover the sludge of biogas has shown better result in fish pond.

(ii) Cage fish culture

On the basis of limnological data, the cage fish culture has shown very encouraging results in the lakes of Pokhara valley. About 12 000 m^3 of cages has been landed in three different lakes of Pokhara giving an average yield of 6 kg/m^3 without any inputs. This cage fish culture activity strictly confines with the landless fisherman only. Several other natural and man made water bodies are being studied for fish production.

5. ACTIONS FOR BETTER MANAGEMENT

For the effective implementation of the production programme, Government has taken a number of actions:

(i) to attract the private sector entrepreneur in the field of fish culture, public sector renders its service for feasibility study and in preparation of the plan free of cost;

(ii) besides the practical training to the farmers under the principle "Learning by Doing" a line agency as Fisheries Extension Unit has been recently established in each districts under the Agriculture Extension System for the follow-up action and to assist the rural farmer *at situ;*

(iii) considering the benefit of small-scale fishfarmers or landless farmers, the lease period of the village pond has been extended to longer period;

(iv) to protect the small-scale fishfarmers or landless fishermen a collateral loan is extended under the close supervision of technicians and bank people.

6. MAJOR ISSUES ENCOUNTERED IN THE FIELD OF INLAND FISHERIES DEVELOPMENT IN NEPAL

(a) Nepal has ample of natural water resources in the form of rivers, lakes and upcoming reservoirs to be studied throughly to explore them in fish production. So far due to the lack of technical know-how, no major attention has been given to explore these natural water resources. Thus the technical assistance is sought very urgently in this field.

(b) Lack of physical facilities and trained manpower are other constraints for the rapid development of inland fisheries including aquaculture.

APPENDIX/ANNEXE P

Country Statement: New Zealand

1. INTRODUCTION

The local New Zealand industry continues to be dominated by the coastal demersal (trawl) fisheries and by potting for rock lobsters. In both cases the majority of the fish and shellfish taken are destined for export. However, with the decline in cpue for the principal species the fishermen are attempting to diversify to new techniques and new species. Further opportunity to expand came with the declaration of the 200 mile Exclusive Economic Zone (EEZ) in 1978 but because most of the zone is in waters deeper than 200 m in exposed sea areas this has meant the employment of much larger vessels and has so far had little effect on diverting existing fishing effort from inshore grounds.

The desire to exploit these offshore resources in order to maximise the country's earnings led to the Government supporting cooperative ventures between overseas interests and local companies under controlled conditions. In general cooperation was fostered with companies of countries which had previously fished the zone or could provide access to additional markets.

Because the continental shelf is narrow (average width 19 km) local fishermen had tended to fish from small craft with trips varying in duration from one to five days. Thus there has to be a major change in attitude and scale of operations to much longer duration cruises from much larger vessels.

The principal objectives aside from maintaining earnings and employment for the coastal fishermen have been to maximize foreign exchange earnings from the resources themselves, to progressively 'New Zealandise' the offshore fisheries and, where appropriate, to add value to fisheries products by appropriate onshore processing.

2. MAJOR ISSUES ENCOUNTERED

Fishing was subject to restricted entry until 1962 when a system of open entry - requiring a simple permit - was introduced. The net effect has been to allow uncontrolled development with the result that the fisheries for the prime trawl species, for rock lobsters, scallops and abalone are overexploited . In 1980 a system of limited entry was reimposed on rock lobster fishing, and controlled fisheries for dredge oysters and eels in some areas have been instituted.

In addition quota limits have been set for selected fisheries, e.g., snapper *Chrysophrys auratus* in the Hauraki Gulf and Tasman Bay and for scallops in Tasman and Golden Bays. Export quotas have also been established for abalone. Since 1982 there has been a moratorium on the issue of all further inshore finfishing permits except for some pelagic fishing. This moratorium is regarded as a precursor to the development of regional fisheries management plants. These in turn will require to develop some criteria for more equitable distribution of fishing access between the large vessels capable of fishing further offshore and into deeper water and the smaller craft restricted to the shallower inshore areas.

There is generally no limit to permits for trolling and pole and line fishing for highly migratory species or for long lining. This provides an opportunity for fishermen to diversify into new types of fishing in coastal waters as well as to extend their sphere of operations into deep water should they so desire.

In the deep water there are as yet insufficient data on the stocks and species to permit calculation of sustainable or optimum yields and the approach to setting TACs or quotas by species and areas has been conservative. Nevertheless there has been a very significant expansion in fishing power by both locally owned and joint venture trawlers since 1978 to the point where here too, there has had to be some limitation of effort.

One of the principal problems has been the development of fisheries for deep water (600-1 500 m) species about which little or no quantitative or biological data previously existed. A further problem is that spawning concentrations of the most valuable finfish occur more or less simultaneously in different parts of the zone so that year round fishing operations are difficult to mount. Squids which are among the most abundant species are taken by trawling and jigging. In the latter case the effort is divided between joint venture and foreign licensed vessels whilst joint venture and local craft exploit the trawl stocks.

Onshore processing capacity is more than adequate to cope with the current landings and there is increasing evidence of competition between factories for product. In general, markets do not present a problem although the New Zealand industry needs to adapt better to fluctuations in world prices and to adopt a better marketing approach to meeting consumer demand.

Surveillance, particularly of licensed and joint venture operations presents some problems but these are generally of less significance than in other parts of the world because of the virtual absence of inter-State boundaries with zones of other countries.

3. CURRENT DEVELOPMENT PROGRAMMES

As noted in Sections 1 and 2 the fishing industry is in the process of re-organization with retrenchment in some areas and development in others. Programmes aimed at assisting vessel purchase have been severely curtailed in the inshore trawl and shellfish fisheries although assistance by way of grants and loans is still available for some pelagic fisheries.

Purse seining for highly migratory species such as skipjack tuna by overseas charter vessels continues to be encouraged although the numbers of such vessels is limited. Long lining for southern bluefin and albacore tuna is restricted by limiting access to foreign licensed vessels but on the west coast of the South Island a significant hand line and troll fishery for southern bluefin tuna by local vessels has developed. In this case fishermen are being trained to catch and process the fish for the Japanese sashimi market in order to maximize returns from the fishery. Although the catch is a minor proportion of the total stock scientists and administrators are aware of the need for adequate international control of the fishery.

Encouragement is also being given to the development of pole and line fishing for skipjack and albacore. Such fisheries which can be undertaken from the smaller local craft provide alternative employment for fishermen previously engaged in trawling or rock lobstering and helps to reduce pressure on these fisheries.

Onshore processing of squid and some of the deep and mid water resources is being encouraged as is the further development of by-products such as meal and oil.

4. REGULATORY MEASURES

In the inshore fisheries regulation of effort is primarily by mesh size although as already noted other controls have been and will be effected. In some specific areas quotas have been imposed; in others there are closures to protect spawning and nursery grounds. Pair trawling is also prohibited in some areas and the commercial gathering of shellfish by the use of scuba gear is totally prohibited. Pot and dredge size limits and the like have also been introduced.

Within these overall regulatory measures Regional Fisheries Management Plans are now being developed through local fisheries liaison committees. The objective is for fisheries managers, scientists, enforcement officers, fishermen, processors, local authorities and recreational fishermen to combine their views and experience to develop plans which will: (a) cause the least disruption to the established fishing patterns and (b) preserve the interests and rights of the various groups concerned. It is too early to say how successful these may be but a considerable degree of interest and enthusiasm for the concept exists in some regions.

Two of the principal problems relating to the administration of coastal fisheries are the cumbersome nature of the current law and the lack of reliable statistics on catch and effort. The original Fisheries Act which dates back to 1908 has been redrafted and it is hoped that the new Act will become law in 1983. This should make it possible for managers to react more swiftly to arrest perceived adverse trends in the fisheries. A new and adequately serviced Fisheries Statistics Unit has been established and it is expected that this will enable the preparation of a more reliable data base for management.

In the offshore fisheries, regulation is by area and species quota control although other measures such as minimum mesh size and seasonal closures as well as limits on the number of vessels are being introduced. A discussion document on a policy for the development of the deep-water fisheries was recently released to industry. This proposes amongst other things the allocation of company quotas by species with provision for inter-company trading of quotas. Whilst detailed comments on the document are still awaited there has been a general recognition that some regulation of catch and effort is essential if the offshore operations are to remain economically viable.

Strategies still need to be developed to avoid conflict between the traditional small inshore craft and the larger deep-water vessels particularly in those parts of the coast where the continental shelf is very narrow.

In coastal waters the majority of the prime demersal species are already overexploited and one or two fisheries have collapsed. This in turn has led to some succession fishing which needs to be arrested either by diversifying to new species or by reducing the total effort. Some shellfish stocks are similarly overexploited and again there has to be some limitation on effort. However, in this case research and development are aimed at either aquaculture or rehabilitation of depleted resources. In the latter case particular emphasis is directed at the abalone and scallop fisheries.

5. INFORMATION NEEDS FOR POLICY DEVELOPMENT

As noted in Section 4, there have been insufficient data on catches and landings in the past but this situation should be rectified within the next two years. Financial information is being dealt with separately via an industry board but when combined the data should permit the development of management plans designed to protect the economic viability of most operators. The need to restructure and redeploy some sectors of the industry will inevitably have some social consequences but no detailed research on this aspect has been undertaken. However, there are relatively few subsistence fishermen and most of these fish to supplement their sometimes marginal earnings from other activities such as small scale farming. One of the objectives of the new law is to protect the bonafide fisherman (defined as earning 80% or more of his income from fishing) from the activities of part timers. However, some provision will need to be made to also protect the interests of the few subsistence fishermen referred to above.

In the offshore areas the recentness of the fisheries and the lack of quantitative and biological data on the species make yield assessment particularly difficult. The problem is further compounded by lack of adequate research vessel capabilities. This has led to a conservative approach to allocation of TACs. However, as the fisheries continue to develop and more data are acquired more accurate estimates of the resources and their potential yields should be possible. The impact of deepwater, slope and shelf fisheries on the movement of stocks has yet to be assessed as there are insufficient time series of data to demonstrate the existence let alone the significance of such behaviour. The recent discovery of the existence of straddle stocks in some areas is likely to create some new management and enforcement problems.

Despite the above comments there is some room for cautious optimism with respect to the potential of the known resources from deep water. It is also possible that there may be other species capable of later utilization. One problem is the variable unit value of the various deep-water species and the natural inclination of the fishermen and companies to exploit those which yield the highest unit return.

Marketing and market intelligence rests principally with individual companies and the industry but it is supplemented by information produced by the industry board which has also supported investigations of potential new overseas markets. This has been

particularly necessary as several of the principal New Zealand species, particularly those from deep water were, until recently, virtually unknown on world markets.

As mentioned earlier there is a need to tailor products to consumer demand but, in addition, there is a need for quality assurance and in this respect particular attention is being paid by Government to the development of very specific quality and hygiene standards for export produce as well as to certification for levels of trace metals which occur naturally in New Zealand waters.

In conclusion it is pertinent to note that whereas the coastal fisheries have followed the general world sequence of expansion, overexploitation and retrenchment, the lesson has been learned to the extent that measures are being taken now to prevent a similar sequence in the fisheries of the wider EEZ.

APPENDIX/ANNEXE Q

Philippines Fisheries Profile

1. INTRODUCTION

The Philippine fisheries is composed of three major sectors: marine commercial, municipal and inland fish culture. The 1981 total fish production by sector as compared to 1980 is shown in Table 1.

For the year 1981, a total of 1.7 million t production was recorded showing a six percent increase in terms of volume and twenty percent increase in terms of value amounting to P.Ps. 14 billion over 1980. The industry contributed 4.4 percent and 4.5 percent to gross national product (GNP) for 1980 and 1981 respectively.

1.1 The Marine Commercial Sector

For 1981, the sector contributed 28 percent to total national fish production. It recorded a total catch of 494 768 t valued at P.Ps. 4.10 billion against 1980 production of 488 478 t valued at P.Ps. 3.9 billion showing a one percent increase in terms of quantity and nine percent in terms of value over 1980 (refer to Table 1).

Resources: the marine waters of the Philippines has a total area of 1 666 000 km^2. About 266 000 km^2 are coastal areas which covers waters from the shore to 200 m depth. Of the total marine waters only 126 500 km^2 are traditional fishing grounds.

For 1981, some 2 317 commercial fishing vessels were known operating in the country with a total gross tonnage of 90 019.83 GT. Considering production of the commercial sector in 1981, output per vessel is estimated to amount to 231.5 t and output per tonnage was recorded to be 5.5 t. Legitimate commercial fishermen numbered to about 50 800 with an average output of 9.74 t each.

The major marine fishery resources in the Philippines may be grouped into three categories - namely, the pelagic, demersal and invertebrates (see Table 2). The pelagic resources has two distinct groups, the large pelagic composed of tuna and tuna-like species; and the small pelagic composed of roundscad, sardines, mackerel, big-eyed scad, anchovies, crevalle and cavalla.

(i) Pelagic species

Large pelagic species: tuna species mostly caught in Philippine waters are the yellowfin (*Thunnus albacores*), long finned tuna (*Thunnus alalunga*), big-eye tuna (*Thunnus obesus*), and bluefin tuna (*Thunnus tonggol*). Except for frigate (*Auxis thazard*), and eastern little tuna (*Euthynnus affinis*), all other big species of tuna are said to be part of the large stock that migrate and mix in the warmer waters of the Western Pacific Ocean.

The tuna fishery industry started gaining momentum in early 1970s becoming very much improved during the middle of said decade (refer to Table 2). Especially in the southern part of the Philippines, tunas are caught by commercial fishing vessels using purse seine and ring net with the aid of "payao" (fish shelter) and lights.

Small pelagic: there are several important small pelagic fishes in the country which are exploited by various fishing gears such as the bagnet, purse seine, ringnet, trawl and gillnet. These species in the order of production (see Table 2) are the roundscad (*Decapterus* sp.), sardines (*Sardinella* sp.), mackerel (*Rastrelliger* sp.), big-eye (*Selar crumenopthalmus*), anchovies (*Stolephorus* sp.),crevalle (*Alectis* sp.), cavalla (*Caranx* sp.).

(ii) Demersal species

The production of the demersal fishes in the trawlable grounds has reached to some 200 000 t in 1979 with trawl as the main gear. In the recent years, trawl operation has been strictly prohibited to operate in less than seven fathoms depth and 7 km

distance away from the shore in identified areas where overfishing is evident. As regards demersal fisheries in the hard ground, small-scale fishermen accuse commercial fishing on the use of muro-ami as a gear destroying allegedly the coral reef resources and reducing catch of other municipal gear.

(iii) Invertebrates

The most important invertebrates caught commercially are the shrimp, squid and cuttlefish, crabs and sergestids (see Table 2).

1.2 The Municipal Fisheries Sector

The sector is considered the largest segment of the Philippine fishery industry sharing common resource area with the marine commercial fisheries sector. Its significant contribution or share to total national fish production is maintained within the range of 55 to 60 percent. Its production increased from 1 047 825 t in 1980 to 1 097 064 t in 1981 showing a 5 percent increase (refer to Table 1).

Its area of operation includes the marine waters within three nautical miles of the municipal coastline (marine municipal fisheries) and the streams, lakes and tidal waters (inland municipal) within the municipality. As shown in Table 3, marine municipal fisheries represented about 75 percent of the total municipal fisheries production with the inland municipal contributing the 25 percent balance.

Breakdown of marine municipal fishing production by gear can be seen in Table 4 with the observation that gill/entangling net and hook and line are the most predominantly used gear. With 214 797 fishing bancas as production units of the sector used by 365 388 fishermen, 37 percent were motorized and 63 percent were non-motorized.

1.3 Inland Fisheries Sector

The sector is composed most extensively by the brackishwater fishpond and in a minor extent by the freshwater fishponds. Contribution to national fish production is 10 percent equivalent to 181 065 t valued at P.Ps. 1.9 billion refer to Table 1). Brackishwater fishpond accounted for a share of 9.6 percent of the total national production (170 431 t) valued at P.Ps. 1.87 billion in 1981. While the freshwater fishponds contributed 10 630 t (0.4%) to total production valued at P.Ps. 63.8 million.

1.4 External Trade in Fisheries

In terms of quantity of fish traded, the Philippines imported 46 850 t valued at P.Ps. 288 million and exported 65 703 t of fishery products valued at P.Ps. 843 million. Figures indicate that the value of fisheries exports has exceeded imports by P.Ps. 555 million thus, showing that the fisheries industry is one of the most promising dollar earners of the country. It is one of the basic industries that support the country's economic development.

For the last five years, 1977 to 1981, value of exports of fish and fishery products are as follows: 1977, P.Ps. 395 million; 1978, P.Ps. 532 million; 1979, P.Ps. 782 million; 1980, P.Ps. 939 million; and 1981, P.Ps. 843 million. It showed an annual growth rate of 21%. In terms of export revenues, shown in Table 5 are the ten top fishery exports.

2. MAJOR ISSUES ENCOUNTERED

Having declared through PD 1 599 it stands for the 200 mile EEZ, the Philippine marine waters within the 200 mile EEZ is approximately some 2.2 million square kilometres. Optimization of the use of these areas within the 200 mile EEZ requires planning for relevant policies for the development and management of the area. Foremost is to have a meaningful assessment of resources and their utilization within the zone.

With the improvement of tuna fisheries particularly in southern Philippines and the introduction of 'payao' as accessory to purse seine and ringnet operation, conflict between the small-scale fishermen and the commercial fleet occurred. On the setting of 'payao' small fishermen claimed decline on the catch of their stationary gear.

Recently, chains of 'payaos' had been set extensively by big fishing operators. Trouble arise in cases where small fishermen try to fish around such 'payaos' using hook and line. 'Payao' attracts all sizes of fish, thus juvenile fishes, e.g., juvenile tuna were also observed to have been caught.

Operation of some types of gear like muro-ami also drew the ire of small fishermen alleging destruction of coral reef resources and reduction in their catch.

With the promulgation of Presidential Decree 704 and Letter of Instruction Nos. 480, 1165 and 1269, banning commercial operation on waters within 7 fathoms depth and 7 km distance from the shoreline respectively, there is a need to increase capability of small fishermen in terms of improved technology and facilities for them to be able to utilize and exploit the resources thereat. Enforcement of the ban became a problem with the entry of bigger vessels within the banned area, which claims more capability to exploit the resources.

Illegal fishing operation , e.g., uncontrolled poaching of foreign fishing boats in Philippine waters has been reported by the Philippine Coastguard to reduce the country's fish supply. From 1972-77, some 144 foreign boats were apprehended for illegal fishing.

Technological development brought forth the use of pesticides, fertilizers, chemicals, etc. which due to indiscriminate use destroyed rather than promote production. Industrialization brought forth mine tailings and other sorts of pollution that damaged rivers, lakes and streams and other bodies of water.

On the area of fish culture development, resource utilization is a pertinent issue. How much or to what extent should be existing and remaining mangrove swamps, marshlands should be used for production and how much should be left for conservation and ecological purposes. Considering the present costs of coastal and offshore fishing vis-a-vis cultivation of ponds for fish production, the situation needs further analysis.

As an offshoot of worldwide fuel cost and high prices of fishing equipment and fish production inputs, the problem is shared by both the small fishermen and commercial fishing operators thus prompting them to request the Government for fuel subsidy.

Similar with other member countries, promoting serious consciousness for fishery resource conservation needs attention. In most parts of the country, overfishing, dynamite fishing, use of fine-meshed nets, electrofishing and other illegal fishing methods are commonly reported.

3. CURRENT DEVELOPMENT PROGRAMMES

Development efforts can only be as much as there are available resources. In the Philippines' 5-year integrated fisheries development plan, the direction is toward a balanced approach promoting rational utilization of sectorial resources.

3.1 Inland Fisheries Development Programme

In order to realize the targeted incremental production and development of the inland fisheries sector, major activities are being implemented which include fingerling production and dispersal, extension services, research and training.

Bangos, carp, tilapia fingerlings as well as oyster seedlings are being raised in Government operated brackishwater and freshwater farms primarily for stocking in communal bodies of water to enhance productivity and/or replenish stock of depleted areas and likewise to fulfill requests for fingerlings from private operators.

Extension service in inland fisheries development is geared toward disseminating the latest farm management techniques and directly assisting fishfarmers in the application of such technologies, extension services on fishpen and cage culture, fishpond planning and construction, fish farming and assisting fish farmers obtain needed inputs and assistance in the preparation of project proposals to facilitate availableness of loans.

Several recently completed projects are the support of extension services. One is the Freshwater Fish Hatchery and the Extension Training Center (FFH-ETC) in Muñoz, Nueva Ecija, a USAID-Assisted Project with BFAR as implementing agency which objectives are the production and distribution of fish seedlings for freshwater aquaculture, improvement of freshwater extension capabilities and facilitation of transfer of technology to fishfarmers, and provision of training opportunities for fishpond operators, rice-fishfarmers, extension officers and other groups on developing and management operations of fish hatcheries.

The UNDP-Assisted Brackishwater Aquaculture Development and Training Project is another project being implemented for the improvement of extension service in this sector. Establishment has been completed in four climatic zones of the country for the intensification and expansion of field demonstration activities and provision of intensive training programme on advanced aquaculture technology.

3.2 Commercial Fisheries Development Programme

Major components of this programme include deep sea fishing demonstration, training, extension services and marine research.

The Government undertakes demonstration of improved fishing methods, operations and navigation to fishing boat operators and prospective investors in commercial fisheries. Likewise, advisory services are being rendered by technologists to interested parties on boat design, construction, rigging, installation of fishing gears and equipment, fishing net design and construction, and adoption of improved modern fishing techniques.

Adequate knowledge of the characteristics and potentials of the country's marine resources is indispensable to its rational exploitation and management and for this purpose, a test fishing programme was launched. Specifically, it implements activities relative to the assessment of natural fish stocks through exploratory fishing, oceanographic studies and biological investigation of traditional and non-traditional fishing grounds including the EEZ (200-mile exclusive economic zone) and the corresponding fish handling studies on board research and commercial fishing vessels. Six BFAR vessels are used in the implementation of the above activities.

In addition, the Government operates a Fishermen's Training Center to provide the commercial fishing industry with sufficient skilled manpower.

Although designed primarily for masterfishermen, skippers and engineers on the job in the private sector, instructors from educational institutions and extension workers on commercial fisheries are likewise trained on a limited scale. Two BFAR fishing vessels, the M/V Hasa-Hasa and the M/V Maya-Maya are utilized for practicum.

3.3 Municipal Fisheries Development Programme

Development of the municipal fisheries sector is being carried out through improved credit delivery system, extension services, training, research and provision of supportive infrastructure like fish landing centers, markets, etc.

Liberalized financing/credit scheme for small and medium scale fishermen has been provided through the launching of livelihood projects like the "Biyayang Dagat Programme" (BDP) (Bounty of the Sea), and Kilusang Kabuhayan at Kaunlaran Movement (KKK) (National Livelihood and Development Movement). Under these two programmes, loans are granted to marginal fishermen to finance viable fisheries projects that would generate more income and employment for this particular segment of the industry. Some of the prototype projects being financed include fishing banca, pond, pen and cage culture, seafarming, fry collection and processing.

Technical assistance is being extended to sustain fishermen on the improvement/ motorization of fishing bancas, fishing gear design and construction, introduction of better fishing method, preparation of project proposal to secure loans, etc. Likewise, assistance in the formation of samahang nayon, fishermen's cooperative and fishermen's associations to facilitate acquisition of inputs and marketing of catch is being provided.

The Government also conducts training of municipal fishermen on the rudiments of boat design, construction and/or repair of fishing nets and gears and use of improved fishing techniques. Recently, seven Regional Fishermen's Training Centers (RFTCs) were established in seven strategic locations in coordination with MEC/EDPITAF through a World Bank loan to provide semi-formal fishery training aimed at transferring available skills and knowledge to fishermen to help increase their production and improve their standard of living.

To help survival fishermen find alternative sources of employment and job opportunities, 51 seafarming projects which serve as demonstration centres were established and are being operated by BFAR in strategic coastal areas of the country. Oysters, mussels, seaweeds, shrimps, pearls, lobsters and finfishes are produced in these farms. Seafarming is being looked into as one of the areas where efforts of municipal fishermen can be redirected from the purely fish catching activities currently undertaken in order to reduce fishing intensity to tolerable levels.

3.4 Fish and Fishery Products Utilization

Simultaneous with increasing production, fish handling and processing is being improved to prevent unnecessary wastage on the process. As more fish is produced, the next immediate concern is keeping their quality, as no amount of processing could further improve the quality of the end product. Therefore, research and product development studies/activities are being undertaken to maximize utilization of fish and fishery products and converting the once non-utilizable minor fishery product into a commodity with economic and commercial values and promoting quality control standards.

Extension services in fisheries processing is rendered to encourage the private sector to adopt newly developed technologies in the handling, processing, packaging and marketing of fish, promote import substitution and develop export products and help the private sector explore and expand local and foreign markets for fish and fishery products through seminars, lecture/demonstrations and training on fish handling, fish nutrition, fish processing, marketing, and pilot scale processing or manufacture of different fish and fishery products at the Bureau's existing pilot processing plants to encourage the private sector to engage in commercial production thereby promote import substitution.

To support this programme, ice plants and cold storages of varying capacities were installed in strategic points of the country to facilitate fish marketing and distribution of fish, enabling more equitable fish distribution. Corollary to this, regional and municipal fish landing centres, fishing ports and harbours are being established.

4. MAIN REGULATORY MEASURES TAKEN OR CONSIDERED FOR MANAGING DOMESTIC FISHERIES

To support the total fisheries development and management efforts, regulatory measures were enacted in the form of Presidential Decrees (PD), Letters of Instructions (LOI), Executive and Administrative Orders such as the following:

(a) Letter of Instructions (LOI) No. 480 - banning the fishing operations of commercial trawl and purse seine within a distance of 7 km from the shorelines of the provinces of Samar and Leyte and Sorsogon.

(b) LOI No. 1165 - banning the operation of commercial trawl and purse seine within a distance of 7 km from the shorelines of Manila Bay.

(c) LOI No. 1269 - banning the operation of commercial trawl and purse seine within a distance of 7 km from the shoreline of Masbate, Romblon, Camarines Sur and Camarines Norte and Catanduanes.

(d) Fisheries Administrative Order (FAO) Nos. 130, 131, 132, 134 and 137 - establishing a closed season of five years for the operation of commercial trawl and purse seine within a distance of 7 km from the shorelines of the provinces of Bohol, Cebu, Negros Oriental, Quezon and Palawan.

(e) FAO No. 133 - establishing a closed season of five years for operation of filter net locally known as "sanggab" in Panguil Bay in Mindanao.

(f) FAO No. 136 - establishing a closed season of five years for the operation of all commercial fishing gears in San Miguel Bay in the Bicol region.

(g) PD No. 1055 - amending PD No. 704 by increasing the penalties for certain forms of illegal fishing, dealing in illegally caught fish or fishery/aquatic products as follows:

- by the penalty of imprisonment ranging from 12 years to 25 years in the case of mere possession of explosives intended for illegal fishing;

- by imprisonment ranging from 20 years to life imprisonment, if the explosives are actually used: provided, that if the use of the explosives result in (1) physical injury to any person, the penalty shall be imprisonment from 25 years to life imprisonment or (2) in the loss of human life, then the penalty shall be life imprisonment to death;

- by imprisonment for five to ten years for dealing in illegally caught fish or fishery/aquatic products;

- trawl fishing - by imprisonment tranging from six months to six years;

- FAO No. 40-4 - prohibiting the use of fine meshed nets measuring less than two centimeters when stretched at the bunt or bag in any fishing area of the Philippines except when catching species which by their very nature are small but already mature.

These fishery laws, rules and regulations are being implemented by BFAR with the assistance of the Philippine Coast Guard, the Philippine Constabulary and the Integrated National Police by virtue of a memorandum of agreement executed by and between the Ministry of Natural Resources and the Ministry of National Defense and the concerned agencies under them.

5. REQUIREMENTS FOR FISHERIES RESEARCH AND DEVELOPMENT

It is forecasted that the present 45 million population shall be doubled by the year 2000. The demand for food especially fish as protein source categorically shall also be doubled. Pressure and demand on the fishing industry shall be inevitable which by now should be considered and acted upon.

For the country to meet domestic demand as well as produce excess for exports, there is the need to assess available resources, identify additional potential areas and underutilized resources through a strengthened research programme. The study of the distribution and migration pattern particularly of tuna fisheries and other pelagic migratory species has yet to be pursued. The derivation of technology to be able to utilize other bottom dweller fish and other minor aquatic products need to be considered. Other aspects of development in the field of intensified mariculture, polyculture in inland waters supported by adequate and practical knowledge of fish nutrition are areas that could serve as alternatives for livelihood.

Provision of other hardware and software supports to the Industry in terms of availability of fish landing/ports, improved roads, ice plants and cold storages, fish markets and distribution system, credits, adequately trained manpower, etc. are relevant parameters promoting development.

Table 1

Fish production, 1980-81

Sector	1980		1981		% increase	
	Quantity (t)	Value ('000 P.Ps.)	Quantity (t)	Value ('000 P.Ps.)	Quantity (t)	Value ('000 P.Ps.)
Commercial	488 478	3 784 734	494 768	4 124 641	1.0	9.0
Municipal	1 047 825	6 472 916	1 097 064	7 890 612	5.0	22.0
Fishponds	135 951	1 386 700	181 065	1 938 545	33.0	40.0
Total	1 672 254	11 644 350	1 772 897	13 953 798	6.02	20.0

Table 2

Production of important marine resources, 1978-81
(in t)

	1978	1979	1980	1981
a) Pelagic fishes				
Tunas	197 311	197 311	200 805	203 751
Roundscad	142 613	146 206	132 129	149 947
Sardines	149 665	106 403	117 348	136 871
Mackerel	66 514	58 110	47 866	50 015
Big-eye	46 488	47 027	47 032	33 609
Anchovies	76 118	70 489	80 263	72 745
Crevalle	16 528	16 889	15 325	12 218
Cavalla	17 357	15 579	15 355	21 254
b) Demersal fishes				
Soft ground	191 178	199 608	188 132	
Hard ground	59 067	71 736	82 526	
c) Invertebrates				
Shrimp	17 640	17 896	16 446	17 244
Squid	32 365	29 253	31 732	32 514
Crabs	13 981	17 630	14 830	19 555
Acetes	6 748	5 844	9 327	19 563
Seaweeds	85 824	106 107	115 652	3 278

Table 3

Municipal fisheries production, 1976-81

Year	Marine municipal		Inland municipal		Total production P.Ps.	Total value P.Ps.
	Quantity (t)	Value P.Ps.	Quantity (t)	Value P.Ps.		
1976	619 145	3 316 474	153 380	437 997	772 525	3 754 471
1977	712 514	3 825 855	162 420	548 815	874 934	4 374 670
1978	775 932	4 555 043	179 950	407 563	955 882	5 062 606
1979	737 587	5 280 212	209 371	541 907	946 958	5 822 119
1980	762 405	5 478 819	285 420	994 097	1 047 825	6 472 916
1981	805 809	6 533 158	291 255	1 357 454	1 097 064	7 890 612

Table 4

Marine municipal fishing production by gear, 1976-81

(in t)

Municipal gears	1976 a/	1977 a/	1978	1979	1980	1981
Bag Net			48 661	44 226	30 996	21 214
Gill/Entangling Net			185 088	202 831	226 326	267 301
Drive-in-Net			1 006	2 669	410	4 351
Fish Corral			14 353	37 476	26 170	34 563
Baby Trawl			15 518	15 165	10 913	17 254
Beach Seine			50 956	39 729	53 761	44 274
Purse Seine/Ring Net			30 230	53 690	59 161	42 902
Round Haul Seine			6 799	7 467	4 705	5 531
Hook and Line			118 974	166 316	170 857	186 753
Long Line			16 883	25 012	19 639	17 741
Troll Line			-	-	1 492	8 699
Pole and Line			-	-	416	1 451
Trigger			-	-	318	1 079
Lift Net			1 924	1 905	1 092	3 967
Crab Lift Net			-	-	744	2 056
Cast Net			-	-	36	108
Push Net			5 740	5 613	5 211	6 829
Filter Net			869	2 225	3 505	8 482
Fyke Net			-	-	-	25
Fish Pot			2 818	2 012	2 899	3 538
Spear			-	-	4 524	7 745
Others			103 385	131 251	139 530	24 126
T O T A L	619 145	712 514	775 932	737 587	762 405	709 989

a/ Data by region, not by gear

Source: Fisheries Statistics of the Philippines, 1976-81

Table 5

Ten top fisheries exports in terms of value, 1981

Commodities	Quantity (t)	Value '000 P.Ps.
1. Tuna	54 204	779 417
F/C	35 830	361 088
Smoked	341	9 761
Canned	18 033	408 568
2. Shrimps	3 197	178 420
Live	1	39
F/C	2 899	171 988
Dried	297	6 393
3. Shellcraft Articles	1 465	73 198
4. Seaweeds	15 879	60 095
Fresh	148	361
Salted	25	406
Dried	14 937	58 513
Kelp Meal	769	815
5. Aquarium Fishes	1 827	23 503
6. Reptile Skin	25	17 401
Dried	17	13 458
Raw	8	3 943
7. Ornamental Shells	2 167	17 370
8. Cuttlefish/Squid	449	16 661
F/C	411	15 897
Dried	38	764
9. F/C Miscellaneous Fish	946	15 250
10. Shark Liver Oil	381	12 114

APPENDIX/ANNEXE R

National Statement of Sri Lanka

1. INTRODUCTION

Sri Lanka is situated in the Indian Ocean, southeast of India and lies within the latitudes 6°-10°N and longitudes 80°E. The country has a land area of 65 000 km^2, a coastline of 1 200 km and a shelf area (up to 120 m depth) of 30 000 km^2. With the promulgation of the Exclusive Economic Zone in 1976, Sri Lanka has sovereign rights over an area of about 230 000 km^2 of the sea.

Fishing has been a traditional occupation in the coastal area of Sri Lanka for centuries. Fishing takes place around the coast with concentration within the continental edge, which is an area within 20 miles of the coast and averaging about 14 miles in width. Waters within the Exclusive Economic Zone of 200 miles represent the principal resources open for exploitation by Sri Lankan fishermen. Inland fishing is done in freshwater tanks and reservoirs, in brackishwater lagoons and estuaries, in fresh/brackishwater ponds and in mangrove swamps.

2. PROFILE OF THE FISHERIES

2.1 Economic Role of the Fishing Industry

The fishing industry in Sri Lanka has a relatively high importance in the economy compared to other countries. The value added each year to the Gross Domestic Product by the fisheries sector in 1977, 1978, 1979, 1980 and 1981 at 1975 constant prices was as follows:

Year	Total GNP (SLRs M)	Fisheries contribution (SLRs M)	Percent
1977	29 319.6	407.8	1.39
1978	32 068.5	452.9	1.41
1979	33 987.5	485.6	1.43
1980	35 926.1	528.4	1.47
1981	37 805.7	601.8	1.59

The industry is also important for the reason that it supplies a very substantial proportion of the animal protein consumed by the population of Sri Lanka. In 1979 and 1980 the Fisheries Sector contribution in this regard were 60.6 and 61.3 percent respectively.

The fishing industry is of considerable social and economic importance since it provides direct employment to about 74 000 persons in fishing and to about 14 000 persons in related anciliary occupations.

In recent times the fisheries sector has developed into an important source of foreign exchange earnings. In the years 1978, 1979, 1980 and 1981 value of fisheries sector exports amounted to SLRs 233.1 million, SLRs 307 million, SLRs 250 million and SLRs 348 million respectively. This was around 1.5% to 2.0% of the country's total export earnings during these years.

Sri Lanka is one of the few countries in the world which has a separate Ministry of Fisheries under a Cabinet Minister. This Ministry was set up in 1970, in recent times Fisheries Development has been assigned high priority in the National Development Programmes of Sri Lanka. This is reflected by the substantial increases in the capital expenditure allocations in the National Budgets for Fisheries Development.

2.2 Fisheries Resources

2.2.1 Marine fisheries

For convenience the marine fisheries can be considered under two categories - the Coastal Fishery and the Offshore and Deep Sea Fishery.

(a) Coastal Fishery: this is defined as the fishery which is carried on in the area of the sea which extends up to 20 miles off the coast. There has been a number of surveys of the fish resources available in this area.

Estimates of annual sustainable yield range from 250 000 t to as much as 850 000 t. The most recent surveys carried out by the Norwegian research vessel DR. FRIDTJOF NANSEN in 1977-78 estimated the total biomass of Sri Lanka's coastal shelf and immediately adjacent area at 750 000 t. The annual sustainable yield from these resources is estimated to be about 250 000 t of which about 80 000 t represent large demersal and semi-demersal fish. Present total production in this sub-sector is in the region of 172 000 t per year.

(b) Offshore and Deep Sea Fisheries: the offshore fishery is defined as the fishery in the area of the Exclusive Economic Zone between 20 and 60 miles from the coast and the deep sea fisheries as the fishery in the area beyond 60 miles from the coast. The resources in the offshore and deep sea fisheries are yellow-fin and big-eye tuna and species such as skipjack, marling, swordfish and shark. The magnitude of the resources is not accurately known. An annual sustainable yield of 29 000 t has been estimated. Annual production, however, is little over 2 000 t.

(c) Fishing Craft and Fishing Methods: the fishing fleet in 1981 consisted of 28 584 craft of which 12 869 or 45% were mechanized craft. Details by type of craft are given below:

Trawlers	-	6
10-11 t boats	-	30
3 1/2 t boats	-	3 112
Other mechanized craft (including 17 1/2 ft FRP boats)		9 724
Non-mechanized craft		15 715
		28 584

Gillnetting is the major type of fishing and this accounts for about 70% of the total fish production. Other fishing methods adopted are trolling, pole and line and longline fishing and trawling.

2.2.2 Inland fisheries

The inland fisheries include over 300 000 acres of brackishwater estuaries and lagoons and 344 000 acres of man made inland reservoirs and tanks. The latter comprise of major reservoirs and tanks, 175 000 acres in extent, which usually carry water all the year round and the seasonal tanks 169 000 acres in extent, which do not carry water all the year round. Present production in the inland fisheries is in the region of 29 000 t. Over 2 000 non-mechanized craft are engaged in inland fishing. Gillnetting with nets of mesh sizes less than 3 in accounts for over 90% of the inland fish production.

2.3 Fish Production

There had been considerable increases in fish production in the country in the last two decades as could be seen from the following data:

Year	Estimated production (t)	Year	Estimated production (t)
1960	52 180	1975	127 106
1965	92 740	1980	184 722
1970	96 608	1981	203 586

This increase in production is substantially due to the State sponsored programme for the mechanization of traditional craft and the introduction of modern mechanized boats. Another factor responsible for the increase in production had been the introduction and popularization of new and more efficient forms of fishing gear.

2.4 Utilization, Consumption and Trade

It is estimated that nearly 85% of the fish produced in Sri Lanka is consumed in the wet form while a substantial proportion of the balance is converted to dried fish. Very little processing of fish is done at present this being limited to the processing of prawns, lobsters and other species such as cuttlefish and squid which are exported.

With the liberalization of imports in 1977, the import of fish and fish products have been substantial. Imports of prepared or processed fish (tinned fish) rank first in terms of quantity and value followed by imports of dried fish.

Fish production, imports and exports and the availability of fish for internal consumption during the last few years are indicated below:

1 Year	2 Production (t)	3 Imports[a/] (t)	4 Exports[a/] (t)	5 Fish supply (2+3-4) (t)	6 *Per caput* consumption (lb)
1977	136 518	9 143	3 059	142 665	22.92
1978	154 121	8 617	4 542	158 196	24.98
1979	165 723	25 414	6 228	184 909	28.62
1980	184 722	34 253	3 542	215 433	32.74
1981	203 586	10 749	4 394	209 941	31.38

a/ Wet equivalent

2.5 Marketing, Distribution and Physical Infrastructure

2.5.1 Marketing and distribution

Marketing of fish in Sri Lanka is predominantly handled by traders in the private sector. Most traders have close ties with the boatowners/fishermen and make their purchases at the beaches. The fish is then boxed in ice and transported by lorry or rail to consumer centres sometimes as much as 200 miles away. Substantial quantities of fish are brought to the Wholesale Fish Markets in Colombo where it is sold by Commission Agents. The other major fish markets are in Kandy, Jaffna, Galle and Trincomalee. A number of producer fishery cooperative societies are also engaged in the marketing and distributing activities.

The Ceylon Fisheries Corporation, a State Corporation functioning under the Ministry of Fisheries is also actively engaged in the marketing and distribution of fish. The Corporation has fish purchasing centres in important fish producing areas and has its own retail shops as well as selling agents in most parts of the island. The Corporation maintains a buffer stock in order to stabilize fish prices and assists both the consumers and the producers.

2.5.2 Physical infrastructure

(i) Ice plants

The number of ice plants in production at present is 64 with an installed capacity of 690.5 t/day. Of these 25 ice plants with total capacity 300.4 t/day were established during the period 1977-81. Twenty ice plants with capacity 180 t/day are owned by the private sector while the rest are privately owned. The majority of the ice plants are located in three coastal districts in the western region namely Colombo, Negombo and Puttalam district.

(ii) Freezing and cold storage

The establishments engaged in freezing of fish/prawns are privately owned establishments situated in Colombo and engaged in processing of prawns for the export market. The larger cold rooms are located in Colombo, Galle, Beruwala and Trincomalee and these are owned by the Ceylon Fishery Harbours Corporation.

(iii) Fisheries harbours

Sri Lanka has a number of fisheries harbours the principal ones being in Colombo (Mutwal), Galle, Beruwala, Mirissa, Tangalle, Trincomalee, Myliddy and Mannar. Two new harbours are now under construction at Valachenai in the east coast and Puranawella in the south coast. These harbours have safe berthing facilities for fishing vessels, fish storages, workshops, slipways, etc. However, due to several reasons most of these harbour facilities have not been fully utilized.

2.6 Institutional Structure

Ministry of Fisheries

The development, promotion and management of the fishing industry in Sri Lanka is the responsibility of the Ministry of Fisheries which has its headquarters in Colombo.

The Ministry of Fisheries which is an integrated Ministry now has several divisions each being responsible for specific functions relating to Extension and Regulation, Education and Training, Finance, Administration, Planning and Programming, Development and Implementation, Fishermen's Welfare, Coast Conservation and Inland Fisheries. The Ministry has a large field staff carrying out extension, enforcement work, collection of statistics and implementation of welfare programmes. In inland areas where inland fisheries activities take place there are field officers centered in the inland fisheries stations.

Three other agencies also function under the Ministry. These are:

(a) The National Aquatic Resources Research and Development Agency (NARA). This is an autonomous body created by an Act of Parliament in July 1981 to direct and coordinate all research activities in management and development of aquatic resources. This agency has divisions dealing with marine fisheries, inland fisheries and aquaculture, post-harvest, fish technology, fishing methods and technology, oceanography, statistics and data processing. This agency monitors close collaboration with research institutions and universities both local and foreign.

(b) The Ceylon Fisheries Corporation (CFC). This Corporation was set up in 1964 under the State Industrial Corporation Act. The functions of this Corporation from its inception were production, processing and marketing of fish, bulking of boats, imports and distribution of fishing gear, construction and management of fishery harbours, and provision of other shore facilities, cold storage, etc. It now concentrates primarily on marketing and distribution of fish.

(c) The Ceylon Fishery Harbours Corporation (CFHC). This Corporation was set up in 1972 and is responsible for the construction, management and maintenance of harbours and anchorages and for the provision of shore based facilities supporting the fishery industry. The Corporation also provides services and support facilities to the Ministry and the industry in the field of engineering and construction.

The important types of organizations concerned with fisheries development are the Fisheries Cooperative Societies and Fisheries Extension Service Societies

(i) Fisheries Cooperatives

Fisheries Cooperatives were first set up in the 1940s for the benefit of the small-scale fishermen. Societies grew in numbers till they reached about 280 in 1970 and these small primary societies were amalgamated into 45 large primaries and these became the media through which Government's development efforts were channelled to the fisheries

sector. However, these cooperatives had only a limited success because of deficiencies in management. Fish production by cooperative owned boats were very much lower than by privately owned boats. These skippers of the cooperative boats did not have the incentives to increase the performance of the boats as long as the ownership of the boats still remained with the cooperatives even after the skippers' repayment of the loans which were obtained for the purchase of these boats. A reorganization programme to make the cooperatives viable units has been undertaken in recent years. A feature of this programme is the provision to transfer ownerships of fishing craft to the skippers after the repayment of loans. The present policy is to strengthen and revitalize these cooperatives and preferential treatment is now extended to cooperatives in the issue boats as well as subsidies.

(ii) Fisheries Extension Service Societies

This is a new form of fishermen's organization recently established in Sri Lanka. These societies have been organized to enable active fishermen to participate in the formulation of policies and programmes for fisheries development at the grass roots level and in their implementation. They are also the means through which information relating to Government policies, schemes or measures designed to benefit the fishermen are disseminated among the fishing community and through which their problems and requirements are made known to the relevant authorities. The progress in the first two years in the functioning of these societies has been satisfactory and they showed that these societies have great potential in acting as nerve centre of activities in fishing villages.

3. POLICY OBJECTIVES

Sri Lanka's fisheries development is now effected within the framework of a Master Plan for Fisheries Development, 1979-83 the objectives of which are as follows:

(a) to step up production of fish and to raise *per caput* consumption to 44 lb per head;

(b) to raise the income and standard of living of fishermen who are among the least favoured groups in the country;

(c) maximize employment opportunities in the fisheries sector.

4. DEVELOPMENT STRATEGIES

In line with Government's general economic and social policy, private sector participation in the development of fisheries is encouraged through fiscal incentives, direct subsidies and credit and free imports of inputs. Public sector role is mainly in the provision of incentives, services and infrastructural facilities.

The Coastal Fishery is reserved for the local fishermen and this fishery is given the highest priority in the development programmes because of the availability of unexploited resources, low investment costs, its importance as a source of employment and income to a large number of fishermen in the coastal areas, and its potential as a foreign exchange earner.

The mechanization of the fishing fleet has been one of the most important developments in the Sri Lanka fishery during the last two decades and at present over 45% of the marine fishing fleet is mechanized and contributes to over 70% of the total production of fish. In this context the recent petroleum prices hike has had a very damaging effect on the industry. The fixed investment costs as well as the operating costs have been pushed to high levels profit margins reduced with adverse effects on the viability of mechanized fishing. We have taken a series of counter measures such as provision of subsidies, promoting the use of fuel saving devices such as sails, use of low horse power engines among others.

The Offshore Fishery is at present exploited by the 38-ft vessels issued under the ADB financed first fishery project and by some vessels of the Cey-Nor Foundation. Joint ventures with foreign participation are permitted because of the present low level of exploitation. As regard the deep sea fishery which involves high capital investment, large vessels and equipment, high technical and management expertise which Sri Lanka is unable to provide. Hence foreign collaboration mainly in the form of joint ventures is encouraged in this field.

In view of its great potential for providing domestic fish supplies at low costs and providing employment opportunities to rural people the Government has accorded priority to the development of inland fisheries. Emphasis is on increased production and stocking of fingerlings in the major freshwater tanks and reservoirs and in increased harvesting by the introduction of more fishing craft and new methods of fishing. Development of the other water bodies like the minor freshwater tanks, brackishwater lagoons and river mouths and ponds through pilot development schemes is also being continued. Substantial investments for providing the necessary infrastructure and other supporting services will be made by the Government.

Fish production is to be increased from 154 000 t in 1978 to 300 000 t in 1983. Contributions expected from the different sub-sectors are:

Sub-sector	t	Percent
Coastal	316 000	72.0
Offshore	32 000	10.7
Deep sea	2 000	0.7
Inland	50 000	16.6
Total	300 000	100.0

Increase in production will be achieved by:

(a) introducing a substantial number of new mechanized and non-mechanized fishing vessels in the coastal sector and by issuing outboard marine engines for mechanizing existing traditional craft. It is expected to issue during the plan period 1979-83, 1 950 Nos. of 28.32 ft boats, 2 400 Nos. 17 1/2-23 ft FRP boats and 8 850 outboard engines;

(b) introducing 150 medium sized fishing vessels under foreign aid projects for offshore resource exploitation;

(c) increasing the operational efficiency of fishing craft by ensuring an adequate supply of fishing gear and engine spares;

(d) channelling private sector finance for investment through fiscal incentives and providing bank credit and Government subsidies for capital investments.

4.1 Utilization

The Institute of Fish Technology of NARA has been engaged in product development work during the last few years. It has developed new methods for the utilization of low value and less popular species of fish in the production of novel fish products such as fish sausage, fish paste, fish sambol, etc., and also for the utilization of trash fish obtained as by-catch and fish wate in the manufacture of a fish silage and fish meal. A fish filletting factory is being set up in Minneriya in the Polonnaruwa district for the production of fish fillets from inland fish. Fish sambol using silver belly is now being produced at the newly established factory in Pesalai in the Mannar District.

4.2 Management of Fisheries

In recent times the Ministry of Fisheries has had to intervene for the purpose of proper management of fishing industry in Sri Lanka. These have been mainly in regard to the conflicts that have arisen in the fishing industry with regard to the extent and methods of exploitation of resources. One such problem is that the activities of the beach seine operators have been affected by mechanized vessels. The

beach seine operators have found that their catches have dropped due to the operations of gillnetters close to the shore. In several instances such problems have been resolved by the demarcation and reserving of certain areas for beach seines. There have also been conflicts between the operators of traditional vessels and small mechanized vessels both exploiting the resources in the same inshore area. Another cause of conflict has been the use of highly efficient methods such as purse seining in areas where the gill-netting is the major method of catching. Recently the Ministry had to intervene and order the discontinuance of purse seining within five miles radius from the coast. There have also been several cases of disputes between the migrant fishermen and the permanent residents of the migrant centres. In such disputes the Ministry endeavours to resolve these by using provisions of the Fisheries Ordinance. In addition to these in recei times the small-scale coastal fishermen have been confronted with two other problems emanating from sources extraneous to the industry. First is the illegal fishing carried out by the foreign vessels in inshore waters. The Government in Sri Lanka has enacted the Regulation of Foreign Fishing Boat (Act) of 1979 to protect the interests of the local fishermen. However, due to the lack of proper surveillance and monitoring capacity it has not been possible to control these activities altogether. However, the vigilance of the local fishermen have contributed to a decline in foreign fishing activities. Secondly, the development of the tourist industry has also brought in its wake difficulties for the fishermen in that some of the areas which were earlier used for parking of boats, mending of nets and drying of fish were taken over by some of the tourist industry developers. However, mechanisms have now been set up so that any adverse effects on the fishing industry are prevented or minimized.

The use of dynamite and other explosives have caused wanton distruction of fish stocks in certain areas and strict enforcement measures are taken to prevent such acts. However, the non-availability of sufficient numbers of patrol craft and enforcement of personnel are important constraints in this regard. A ban on the export of lobsters below a minimum size had to be enforced in 1979 because of evidence of depletion of stocks. This was done despite a substantial reduction in export earnings.

A programme to control coral mining in the southwest and east coast is now being implemented.

In regard to the inland fisheries, regulations were made to control and exercise supervision over fishing in inland water bodies with the objective of full exploitation of these resources. The use of fishing nets of mesh size less than 3 in is not permitted.

4.3 Fishermen's Welfare

The Ministry of Fisheries now accords high priority and importance to the improvement of the quality of life of the fishermen. A separate Fishermen's Welfare Division has been set up in the Ministry. Programmes which are currently under implementation include construction of houses for fishermen, provision of drinking water, and sanitary facilities in coastal and inland areas, installation of beacon lights at fish landing centres, provision of transport services to enable fishermen to travel to fishing centres and back to their houses, improvement of roads leading to fishing villages, operation of air-sea rescue services, payment of accident compensation, insurance schemes to cover lives of crew members and fishing equipment, etc. During the period 1977-81, the following welfare work was done:

	No. completed	Total cost (SLRs M)
Fishermen's houses	1 306	31 944
Wells	200	2 805
Latrines	372	779
Beacon lights	277	1 296
Other services (accident compensation, transport services, etc.)	-	2 305
Total		39 129

4.4 Research

Three marine resources surveys were conducted in 1978, 1979 and 1980 by the Norwegian Research Vessel DR FRIDTJOF NANSEN. The results of these surveys indicated a standing stock of 250 000 t of fish as available for exploitation annually. Of this, 80 000 t are demersal fish. In order to promote and develop exploitation of these resources a demersal fishing project was commenced in 1980. Fishing trials were conducted in Kalkudah in the east coast and Negombo in the west coast and the results incorporated in a report that has already been published by the BOBP.

The other important research projects carried out in the recent years were:

(a) surveys to estimate stock abundance of species exploited in the small mesh gillnet fishery;

(b) studies to determine the availability of the stock of penaied prawns;

(c) studies to locate suitable sites for mariculture stations.

The National Aquatic Resources Research and Development Agency (NARA) which was set up in September 1981, is now responsible for research and development activities relating to all forms of aquatic resources development in the country including inland fisheries.

4.5 Financial Assistance

4.5.1 Producer subsidies

For the development of fisheries the Government of Sri Lanka provides producer subsidies covering different types of activities. The details are set out below:

(i) On issues of boats to individuals

(a)	For vessels over 40 ft in length	- a subsidy of 25% of the cost of hull and engine only.
(b)	For vessels 17-40 ft in length	- a subsidy of 35% of the hull, engine and fishing gear.
(c)	For purchase of inboard engines and outboard motors	- a subsidy of 50% of cost.
(d)	For non-mechanized craft	- a subsidy of 90% of cost of boats used in marine as well as inland fishing.

(ii) On issues of boats to Fisheries Cooperatives

(a)	For vessels 17-40 ft in length	- a subsidy of 50% of the cost of hull, engine and fishing gear.
(b)	Non-mechanized craft	- a subsidy of 90% of the cost of hull, and fishing gear of boats used in marine as well as inland fisheries.

In addition a further subsidy of 70% of the coast of sails also is given on purchases of sails. Subsidies are also provided to fishfarmers for construction of fish ponds. These vary from SLRs 2 000 to SLRs 10 000.

4.5.2 Credit

The Government has also sponsored a scheme of credit whereby the State Banks provide credit to fishermen at concessional rates of interest and on easy terms of repayment. The quantum credit provided is 88% of the total cost of fishing craft, engine, and fishing gear less the subsidies provided by the Goverment.

4.5.3 Tax concessions

New commercial fishing companies are given a tax holiday of five years on profits and incomes and a tax free allowance for capital investment. Shareholders in commercial fishing companies are given tax relief on purchase of shares.

5. PROGRAMMES FOR DEVELOPMENT/MANAGEMENT

Sri Lanka's Fisheries Development is now being undertaken with the assistance of a number of development projects which are implemented with foreign assistance. These are:

5.1 The Northwest Coast Fishery Development Project

This is a three year project financed by a loan from the Abu Dhabi Fund and has as its main objective the exploitation of offshore fisheries resources. Its main components are introduction of 90 Nos. of 34 ft fishing vessels, 2 Nos. of 65 ft vessels for fishing principally in the Gulf of Mannar and the Palk Bay along the northwest coast. The total cost of the project is estimated as SLRs 175.0 million. The implementation of the project was commenced in July 1980 and will be completed by the end of December 1982.

5.2 The East Coast Fishery Development Project

This is being implemented in Batticaloa District in the east coast from March 1980, with the objectives of increasing fish production and employment in this district. It is a three year project with the following components:

(a) construction and issue of 100 Nos. of 24 1/2 ft fishing boats with 20 hp engines and one set of fishing gear;

(b) construction of shore facilities at Valaichchenai which include a fishery harbour, one block ice plant of capacity 20 t/day with 60 t ice store and 25 t chill-room, one fully equipped repair workshop, market area and rest rooms, etc.

The total cost of this project is SLRs 48.66 million of which SLRs 46.20 million will be financed from foreign aid from the Netherlands Government and SLRs 2.46 million from local funds.

5.3 The West Coast Fishery Development Project

This is to be financed by the Asian Development Bank (ADB); it will cover six coastal districts namely; Puttalam, Gampaha, Colombo, Kalutara, Galle and Matara in the west and southwest coasts. Total costs of this project are estimated at SLRs 345.05 million. Its objectives are to increase the efficiency of the currently operating vessels through reduction in fuel consumption, to maintain the present level of fishing effort by the 28.32 ft boats through a programme of replacement of old vessels and worn out engines, to increase the level of exploitation of the offshore fishery resources through the introduction of large fishing vessels.

The main components of the project are installation of improved sails on 1 500 Nos. of the existing 3 1/2 tonner boats and propeller ducts on 200 other vessels , replacement of 400 3 1/2 tonners, introduction of 50 Nos. of 34 ft fishing vessels for offshore fishing and provision of cold storage facilities and fish transport vehicles and construction of a jetty at Palliyawatte.

5.4 The Cage Culture Project

This is financed by the Canadian International Development Research Centre. The total cost of this project is SLRs 1.7 million of which SLRs 0.225 million is foreign aid. Its implementation is in progress and it is expected to be completed by end of 1982.

The objectives of the project are to study the applicability and feasibility of cage culture practices in Sri Lanka's inland waters and to design suitable mariculture projects and to establish model mariculture fishfarms.

5.5 A Sail Powered Craft Project

This is being implemented with US aid and has the objective of studying the feasibility of covering the 3 1/2 t fishing boats in Sri Lanka to use sail power and thus save fuel energy. The project provides for financial assistance for modifications and improvements to the existing 3 1/2 t boat to use both sail and engine power and for construction of five boats of this design, operation and demonstration of the capabilities of these boats to the fishermen.

5.6 Aquaculture Training and Development Project

This is a three year project financed by the FAO/UNDP. The components of this project are:

(a) breeding of Chinese and Indian carp at the Uda Walawe fish breeding station and the stocking of fingerlings in 3 000 ha of seasonal tanks in different districts;

(b) establishment of a National Inland Fishery Research and Development Centre at Uda Walawe;

(c) training of personnel in aquaculture practices.

5.7 Integrated Rural Development Projects

5.7.1 Hambantota district

The integrated development project for the Hambantota district is financed by NORAD and has a major component for the construction of a 5-t ice plant at Hambantota, provision of 14 fishery service centres, provision of drinking water in selected fishing villages, improvements of fish landing centres and exploratory fishing for demersal fish.

The total cost is estimated at SLRs 31.40 million excluding costs of development of the Mawella lagoon.

5.7.2 Puttalam district

The project for Puttalam district is financed by the World Bank. Components for the development of fisheries are: improvements to fishery roads, supply of electricity to selected fishing villages; installation of beacon lights; construction of jetties at Kalpitiya, Chilaw and Wellamankara; construction of office buildings at Puttalam and Mahawewa and residential quarters at Puttalam and Kalpitiya; construction of a fishery service centre at Kalpitiya; provision of a patrol boat and vehicles.

The total estimated cost is SLRs 16.18 million. The implementation of the project proposals was commenced in January 1981 and will be completed by the end of 1984.

Additional integrated projects are planned for other districts such as Mannar, Vavuniya and Monaragala and those too will have components for fisheries development.

APPENDIX/ANNEXE S

The Situation and Prospects of Fisheries Management and Development in Tanzania

1. INTRODUCTION

Tanzania lies on the mid-eastern part of the continent of Africa and on the southwest of the Indian Ocean. She has approximately a total area of 630 000 km^2 of land and a total water area available for fishing amounts to 58 460 km^2, which is about six percent of the total area of Tanzania. Tanzania's population is 20 million. Three major African inland lakes are shared with other neighbouring countries. On the northern part lies a circular, saucer-shaped lake Victoria which is shared with Kenya (population: 13 350 000) a maritime State and Uganda (population: 11 556 000) which is a land-locked State. This Lake is famous for its *Haplochromis* fishery and tilapia. The western boundary of Tanzania is formed by a narrow and deep Lake Tanganyika which is shared with Burundi (population: 3 732 000) and Zambia (population: 5 180 000) both being land-locked States and Zaire (population: 24 721 000) a shelf-locked State. In the south lies Lake Nyasa (Malawi) which is shared with Malawi (population:5 570 000) a land-locked State and Mozambique (population:10 million) a maritime State.

Tanzania is bounded by an 800 km long coastline. The coastline is somewhat straight and is bounded by either sandy, open beaches and some cliff out-croppings especially in the south with mangrove forests in the riverine estuaries and deltas. The continental shelf is generally narrow averaging from some 6 km wide, the widest being 60 km. The continental shelf depends suddenly eastwards, while the southern part lacks any continental shelf worth trawling for fish. Three major islands lie close to the coast with Pemba in the north on the border with Kenya. This clove island lies in one of the deepest areas of the western Indian Ocean coast. Zanzibar is in the middle and Mafia further south form channels bearing their names. These shallow channels are extremely rich in fishery resources. Another feature of the Tanzania continental shelf is that the inshore waters sharp coral outcroppings. This feature is famous in reducing fishing grounds for trawlers.

2. FISHERY DEVELOPMENT OBJECTIVES

Tanzania's fishery development objectives are:

(i) Production of adequate fish to satisfy domestic consumption.

(ii) Production of surplus fish for export in order to earn foreign exchange.

(iii) Rational exploitation and conservation of the fishery resources so as to ensure utilization of resources over a long period of time.

(iv) Provision of employment.

3. DEVELOPMENT STRATEGIES

In order to realize the afore-mentioned objectives the following development strategies have been adopted:

3.1 Increased Fish Production

(i) Provision of large (planked) motorized vessels. Four boatyards are operational in the country producing wooden boats. Except for the use of the local hard timber *Pterocarpus angolensis* all the engines and accessories are imported.

(ii) Introduction of synthetic fibres has revolutionalized the fishing industry. Two fishnet factories are operational in the country. All the yarn needed for the manufacture of nets is imported thus making the factories dependent on foreign exchange for the importation of raw materials and spare parts.

(iii) Various sizes of modern vessels, mostly trawlers, and some of them being super modern have been introduced into the country. These vessels have not only put a burden on transfer of technology but they have also proved expensive to operate especially when fuel prices are ever escalating.

(iv) Financial institutions like the Tanzania Rural Development Bank (TRDB), Tanzania Investment Bank (TIB) have been introduced in order to cater for development projects including fishery projects. Individual fishermen as well as cooperatives are able to get loans to purchase fishing vessels and gear.

(v) Three training institutions have been established in order to get fishery scientists and technicians. Short courses for fishermen are now being arranged and specific centres for training artisanal fishermen are now being established.

(vi) Public companies and corporations have been established of which Tanzania Fisheries Corporation is the most important. Private individuals too are being encouraged to invest in the fishing industry.

3.2 Fish Preservation and Marketing

(vii) The Government embarked on the establishment of fish landing sites in order to assure fishermen safe places for landing their fish.

(viii) Provision of infrastructure like cold stores, ice machines, fish processing kilns and refrigerated trucks are being provided in order to ensure proper preservation, processing and marketing of fish and fish products. A National Cold Chain Operation Company (NCCO) is operational. This company owns a fleet of refrigerated vehicles which distribute fish and other perishable products from where they are produced to their chain of cold stores where the products are stored for marketing. Nyanza Fishing and Processing Company on Lake Victoria is known for the production of fishmeal from the *Haplochromis* fishery of the lake. The product is used by the expanding poultry industry.

3.3 Judicious Utilization of Resources

(ix) Fishery laws and regulations are inexistent in order to protect the resources from overexploitation. Right now programmes are in the pipeline for the establishment of marine reserves and marine parks in order to provide sanctuaries for fish to breed peacefully.

3.4 Employment Opportunities

(x) The building up of industries which are either manufacturing fishing gears or building boats means providing opportunities for employment.

4. CONSTRAINTS IN THE STRATEGIES

It appears that with the investment so far poured in the fishing industry the impact has been minimal. Although we have established public corporations like the Tanzania Fisheries Corporation (TAFICO) and Zanzibar Fisheries Corporation (ZAFICO) there has not been a corresponding abundance in the fish landed. Most of the fish that is consumed in the country comes from the artisanal fishermen.

Investment in TAFICO has gone a long way into catching lucrative crustacean fish for export.

There have not been any meaningful programme to uplift the artisanal fishermen who are the actual producers of fish for local and export markets.

Training institutions have been established for young people who come straight from schools and these young people do not even wish to make fishing as a career.

The technology which has been imported is not only expensive (fuel, spare parts) but it is unabridged to meet conditions obtaining in the country.

The country's resources have been invested into large-scale fishery while small-scale fishery has been neglected. The trawlers have brought with them conflicts with fishermen since they happen to operate in the same fishing grounds where artisanal fishermen are operating. In some areas, like Lake Victoria, the trawlers are known to destroy breeding nests for tilapia. Yet on the coastal area the trawl operator has gone into financial problems since when the net runs over coral rocks the probability is that it gets torn into pieces within seconds.

5. ENTRY INTO FISHERY

Proper management demands full knowledge of the fish biology, behaviour as well as the environment in which the resource exists. Unless periodic resource surveys are done it is difficult to know the situation obtained in the fishery. Hence there is need to invest on resource surveys in terms of scientists and research vessels as well as laboratories.

The problem of entry into fishery is much more serious in the inland lakes of Africa. Here there is pertinent need for cooperation not only in resource surveys but also in harmonizing fishery regulations.

When the third United Nations Law of the Sea becomes operational it will create numerous problems. It is expected from nations to share on equal basis fishery resources within the EEZ of a coastal State with neighbouring land-locked or geographically disadvantaged States. This will call for greater and detailed knowledge of the fishery resource, as well as restraint from conflicts with land-locked and other geographically disadvantaged States.

While we may sit nursing the complications that might ensue in the scramble for fishery resources in the EEZ of coastal States by neighbouring land-locked States it would be attractive to give thought to the expansion of aquaculture development as an alternative to capture fishery. We have high potential areas for aquaculture development in Africa in general and east Africa in particular. Althouth aquaculture has developed mostly in the Far East, there are now known and documented economic technologies of cultivating fish in ponds and of growing sea foods just like farmers are raising cattle or poultry in farms. What is required is the "seed and "feed". East Africa may need to adopt aquaculture as an alternative to capture fishery. I may be right to say that right now we are in the appropriate environment where we can confidently talk of exchange of technology in aquaculture among developing countries.

APPENDIX/ANNEXE T

Fisheries Profile of Thailand

1. INTRODUCTION

Thailand is located in the Indochina peninsular of southeast Asia, between 5° and 21°N latitude and 97° and 106°E longitude with an area of nearly 514 000 km^2. It is bounded on the west and northwest by Burma, on the north and northeast by Laos, on the southeast by Kampuchea, and on the south by Malaysia.

The country is tropical, the climate is a tropical monsoon with clearly defined wet and dry seasons. The rainy season runs from May to October, a cool dry season from November to February, and a hot dry season from March to May, except in the south where there is no pronounced cool season. The annual precipitation varies from 760 mm to as much as 4 200 mm.

Thailand is plentiful of water resources both inland and marine. The estimate of inland water resources is around 5 200 km^2 and the continental shelf areas of 305 000 km^2.

Fish is most important food for the Thais second only to rice. Fish catching is part of a subsistence life of most of the rural inhabitants and plays as major livelihood of people who resided along the coastal areas. Almost without exception, every adult rural inhabitants regardless of sex knows by live-time experience how to catch fish. Fish and fishery products have been, and still are, the cheapest source of animal protein to all in the country.

1.1 Fishery Resources and Assessment

The flood fisheries were formerly played most important role to total inland fish production. Its importance is now declining due to a decrease of flooded areas as the result of extensive impoundment and vast irrigation development projects in the major river basins such as The Chao Phya basin and The Meklong basin. However, newly created reservoirs are now contributing substantially to inland output. Other important producers of freshwater fishes are lakes, irrigation tanks, swamps, community ponds, paddy fields, rivers and canals, fishes are mainly caught by traps, gillnets, cast net, lifted net, hooks, longlines, and several others.

The marine fisheries of Thailand are characterized by considerable diversity in size and type of operation, in gear and fishing techniques. Before the 1960s, activities were mainly confined to coastal waters and carried out by non-mechanized boats using traditional fishing methods such as bamboo stake traps. After the trawl fishery and other farms of mechanized fishing had developed, the total landings have magnificently increased within a short period. The trawl fishery has become the most productive sector or marine fisheries ever since and yielded over 60% of average total annual marine catches. The number of registered trawlers has increased drastically from 2 652 units in 1970 to 8 210 in 1979. The rest percentage is showed by the pelagic fishery which is dominated by purse seine and gillnet, and the small-scale fisheries (Table 1). A total number of registered fishing vessels were increased from 9 388 vessels in 1976 to 11 407 vessels in 1977 and to 12 529 vessels in 1978 (Department of Fisheries, 1980). However, a total number of Thai fishing vessels operated in Thai water were estimated 26 174 vessels of various size in 1977 (Charernphol, 1981). The majority of these vessels are small wooden boats and only 15% are larger than 14 m in length and equipped with modern navigation instruments and fishing gears.

1.2 Fishermen

There are approximately 1 500 marine fishing villages scattered along the coastline of 1 785 km of the Gulf of Thailand and 740 km of the Andaman Sea (Wetchagarun, 1982). A fisheries census in 1976 indicated that a number of fishing households has decreased from 53 456 in 1967 to 40 198 in 1976. The "subsistence" and "employee" households for this period had decreased from 38 321 to 25 558 and from 12 364 to 8 329 respectively, whereas the "commercial" households (having three or more employees on board) had increased from 2 771 to 6 311 units for the same period (Department of Fisheries, 1977).

Table 1

Catch of marine fish by major fishing gears, 1976-78

Major fishing gears	catches			
	1976	1977	1978	1979
Otter board trawl	698 000	986 715	1 013 859	906 290
Pair trawl	179 743	222 379	197 069	172 188
Beam trawl	4 395	10 152	6 704	4 769
Thai purse seines	97 144	42 907	34 585	13 655
Chinese purse seines	4 956	7 504	3 721	4 460
Anchovy purse seines	5 870	2 100	4 046	9 174
Luring purse seines	185 432	384 633	319 346	265 552
King mackerel drift gillnets	6 773	10 579	6 418	10 130
Mackerel encircling gillnets	19 628	35 657	32 575	66 476
Push nets	19 604	27 764	25 415	29 150
Bamboo stake traps	16 867	21 088	10 465	15 425
Others	313 380	316 055	303 582	315 889
Total	1 551 792	2 067 533	1 957 785	1 813 158

Source: Fisheries Statistic Section - Department of Fisheries

1.3 Production

The annual fish production of the country was drastically increased from 847 500 t in 1967 to 1 089 000 t in 1968, to 1 679 000 t in 1973 and exceeded 2 million tons in 1977 and 1978 (Table 2). The production has shown a downward trend since 1978. It may even be serious in the future due to heavy (over) exploitation of fishery resources in Thai waters and the change in the new sea regime.

1.4 Utilization

The majority of the catch is utilized domestically as food for consumption. Fish is mostly sold fresh via local markets but considerable quantities are frozen, sun dried, salted and fermented, canned, etc., for distribution to the northern and northeastern regions. Export volume of all product groups showed dramatic growth over the last decade. The largest foreign currency earner is crustaceans. The export of cuttlefish is even a new development but it reached a dominant place among the export commodities in a very few years. Quantity and value of fishery exports of the last decade has been shown in Table 3.

Japan is the most important trading partner with Thailand, others include the United States, Malaysia, Hong Kong, Italy, West Germany, Australia, France, Singapore, Indonesia, Spain, Norway, Burma, Denmark, etc. Quality control is the major constraint to further expansion of exports of fish and fishery products. Approximately 20% of export volume is rejected annually by recipient countries. Therefore a complete quality control authority for fishery export commodities should be developed and enforced.

1.5 Economic Importance

The fishing industry plays a relatively important part in the socio-economic of the country. After vast development of marine fisheries in late 1960 to early 1970, the fisheries contributed higher percentage to GNP originating from agricultural sector. The percentage contribution of the fisheries sub-sector to GNP has increased from 7% in 1973 to 13.7% in 1980 (Table 4).

Table 2

Total fishery production (t) in Thailand, 1947-79

Year	Total	Freshwater catch	Marine catch
1947	161 024	40 851	120 173
1948	195 840	44 460	151 380
1949	153 700	44 900	108 800
1950	157 800	42 200	115 600
1951	187 000	46 000	141 000
1952	191 500	53 000	138 500
1953	204 500	56 300	148 200
1954	229 800	63 400	166 400
1955	212 970	61 570	151 400
1956	217 960	65 720	152 240
1957	234 570	63 670	170 900
1958	196 300	51 300	145 000
1959	204 790	57 020	147 770
1960	219 045	72 574	146 471
1961	305 605	72 330	233 275
1962	339 788	70 079	269 709
1963	418 685	95 311	323 374
1964	576 986	82 790	494 196
1965	615 120	85 637	529 483
1966	720 282	85 117	635 165
1967	847 443	85 255	762 188
1968	1 089 303	85 245	1 004 058
1969	1 270 034	90 439	1 179 595
1970	1 448 404	112 714	1 335 690
1971	1 587 077	116 788	1 470 289
1972	1 679 540	131 383	1 548 157
1973	1 678 901	140 865	1 538 016
1974	1 510 466	158 876	1 351 590
1975	1 555 300	160 692	1 394 608
1976	1 699 086	147 294	1 551 792
1977	2 189 907	122 374	2 067 533
1978	2 099 281	141 496	1 957 785
1979	1 946 334	133 176	1 813 158

Source: Fisheries Statistic Section - Department of Fisheries

Table 3

Quantity and value of imports and exports of fishes and fishery products, 1969-79

Year	Imports		Exports	
	t	US$	t	US$
1969	12 196	4 424 000	21 758	16 205 250
1970	14 229	4 280 350	44 956	18 490 900
1971	15 934	4 116 250	55 111	24 877 900
1972	15 140	4 184 600	82 381	40 358 250
1973	19 542	4 627 850	104 133	82 496 500
1974	19 965	4 677 250	88 221	77 448 850
1975	19 682	6 259 600	97 994	105 304 400
1976	24 931	7 442 250	133 454	154 887 050
1977	18 634	6 930 800	180 331	179 545 150
1978	28 703	6 765 450	235 386	250 923 650
1979	79 967	21 610 000	277 896	366 300 000

Source: Fisheries Statistic Section - Department of Fisheries

Table 4

Gross National Product (GNP) and Gross Domestic Product (GDP) at current market prices by Agricultural Sector 1971-80

Year	GNP	GDP	Agricultural Sector			
			Crops	Fisheries	Livestock	Forestry
1971	145.4	145.3	29.3	4.4	4.9	2.8
1972	159.8	160.2	35.3	4.6	5.4	3.2
1973	216.1	216.5	56.4	7.0	6.3	3.5
1974	270.8	269.7	62.2	7.3	10.6	4.7
1975	296.4	296.3	68.4	8.0	11.5	4.9
1976	331.3	332.2	74.7	9.9	12.3	5.5
1977	381.0	383.1	76.9	11.1	14.5	5.2
1978	442.0	444.2	88.7	12.7	13.8	5.2
1979	556.2	495.3	108.0	13.0	17.0	9.1
1980	673.7	602.6	128.5	13.7	23.5	10.6

Source: National Income of Thailand
National Economic and Social Development Board

2. MAJOR ISSUES ENCOUNTERED

2.1 Availability of Resources

The rivers, reservoirs, lakes, small impoundments and flooded areas are major inland fishery resources. These waters are located all over the country and accumulated the surface area of more than 5 000 km^2 (Table 5). The rural inhabitants catch fish from these waters for their daily consumption and for earning additional income to the family. The annual fish harvested is estimated well over 100 000 t.

Table 5

Inland fishery resources, 1982

Type of fishery resources	estimated area (km^2))
Rivers and canals	1 500
Reservoirs (man-made lakes)	2 220
Lakes and swamps	320
Small impoundments	500
Flooded areas	480
Total	5 020

On the marine side, the gulf of Thailand and a portion of the Andaman Sea are major fishing grounds for Thai fishing fleets. These waters have been estimated to contain about 718 000 km^2 suitable for demersal fishing and approximately 639 000 km^2 suitable for pelagic fishing (FAO/ADB Marketing Study, 1976).

The potential of demersal and pelagic resources in the Gulf of Thailand and Andaman Sea within Thai territory has been investigated by the Thai Fisheries Department. The potential yield of demersal resources in the Gulf was estimated between 655 000-687 000 t (Boonyubol, 1979), and around 200 000 t in the Andaman Sea(Chullasorn, 1982). The demersal catch has already reached its maximum sustainable yield since 1975. On the other hand, the potential yield of pelagic resource was estimated 400 000 t for the Gulf (Phasuk, 1979) and 60 000 t for the Andaman Sea (Chullasorn, 1982). It is apparent that the pelagic resource is not yet in a state of heavy exploitation; it could be increased annually by an estimated 100 000 t.

2.2 The Catch and Processing Capabilities

In 1978, total landings from marine waters were 1 957 785 t. Approximately 43% of the landings were small fish and low quality (trash fish) which were used for animal feeding and fish meal. Traditionally Thai catches are divided into Indo-Pacific chub mackerel (3-7% of the total), other food fishes (20-30%), shrimps and lobsters (4-8%), molluscs (5-15%), cuttlefishes (4-7%) and miscellaneous (40-60%).

Food fished and shellfishes are sold fresh to local markets. The accesses are preserved in various forms such as frozen, canned, salted and dried, fermented and others. Frozen and canned products are mainly for exports, only small portion can be absorbed by local markets. Over 90% of trash fish are channelled to the fish meal industry. The current fishery post-harvested industries operated in 1979 are listed in Table 6.

Table 6

Post harvested industry in Thailand, 1979

Processing Plant	Number	Total capacity
Freezing and cold storage	30	14 524 t
Fish meal Plants	91	182 835-251 536 t (fishmeal)
Canning	13	-
Fish sauce	128	-
Fish paste	586	-
Salted fish	340	-
Dried shrimp and squid	246	-
Smoked fish	9	-
Steamed fish	63	-
Fish ball	15	-
Others	34	-

Source: Fisheries Statistic Section - Department of Fisheries

2.3 Fishing Communities

There are approximately 1 500 fishing villages scattered along the coast of the Gulf of Thailand and the Andaman Sea. These fishing villages are generally located on the estuarine area where the natural resources are rich. The state of community development varies from moderate to minimal. The general characteristics of these fishing villages are that most houses are wooden, simple, usually self-constructed. House made either of bamboo or mangrove tree, with a thatched palm roof, or of wood with a roof of tin or abbestos. The house is usually one-roomed affairs. The setting of the communities is either in clustered or ribbon-type settlement stung along the mangrove forest, beach, canal and river bank. The average size of these fishing communities are 50-150 households. Traditional fishing communities are frequently isolated both geographically and socially, and the standard of living are relatively poor.

Fishing in these communities is classified as artisanal. Fishing boat is small with or without engine. Fishing gears are simple such as small gillnet, traps, push net, cast net, scoop-net, hook and line. Operation is limited to near shore area which is not far from their home and good for one day or night trip. Catch per fisherman is relatively low. The catch is mostly sold at dispersed points of landing or even at sea.

The small-scale fisheries in Thailand play a minor role in the fishing industry of the country. The statistical records revealed that catch from this sub-sector ranged from 82 000 t in 1974 to 136 000 t in 1979. Table 7 is a comparison between the production of small-scale fisheries and commercial fisheries.

2.4 Competition for Fishing Resources

As a matter of fact, the small-scale fishermen are rely solely on natural resources around them for their earning and living. Exploitation of the resources is rarely subjected to any conservation principles and/or management scheme. Therefore most of fishing resources along the coast are in depressing stage. The catch is declining both in terms of quality and quantity. A reduction of the catch means a lower income and less quality of living for traditional fishermen (Wetchagarun, 1982).

Furthermore, the change of the new sea regime has resulted in all neighbouring countries proclaiming their right over the new Exclusive Economic Zone (EEZ). Most of the Thai fishing fleets can no longer fish anywhere except within Thai territory waters. The

Table 7

Comparison of annual marine production caught by artisanal fishing and commercial fishing, 1974-79

Year	Annual Production (t)		Percentage AF/CF
	Artisanal fishing	Commercial Fishing	
1974	81 814	1 269,749	6.44
1975	117 386	1 277,242	9.19
1976	129 914	1 421,878	9.14
1977	96 693	1 970,840	4.91
1978	119 479	1 838,306	6.50
1979	136 013	1 676,987	8.11

Source: Fisheries Statistic Section
Department of Fisheries, Bangkok, Thailand

situation will add more fishing pressure to limited and depressing resources. Less opportunity of catching fish will be encountered by the traditional fishermen since they cannot compete in fishing with the superior commercial fishing fleets.

Even though the Thai fisheries regulation prohibits the trawl fishery in coastal areas up to 3 000 m limit, the trawlers always break the regulation and result partially and/or totally damage to coastal fishing and nursing grounds. Productivity in this area will be decreased, less fish will be left for traditional fishermen to rely on. Their living is more difficult. As a result, many of them have developed fishing techniques for better catch and are often employed with poisoning and explosive materials. With misconducted fishing activities, it will effectively speed up rate of depletion of the resources. Even worse situations are expected in the future. Therefore, properly management of the fishery resources should be strengthened and alternative means for living of these poor traditional fishermen should be arranged.

3. CURRENT DEVELOPMENT PROGRAMME

More attention and financial aid have been given to fishery research and development in Thailand in recent years. Several national and international development and assistant programmes have been formulated and are now in various stages of implementation. Summaries of these programmes are as follows:

(a) National Fish Stocking Programme

This programme has been launched since 1978. It is a nation-wide fish propagation campaign through stocking. The major objectives of this programme are: to provide more food fish to people; to demonstrate and teach people to know how to propagate fish and practical conservation of the fishery resources.

(b) Village Fish Pond Development Project

This is a national project under the accelerated socio-economic development programme for the rural poor area of the Fifth National Economic and Social Development Plan (1982-86). The purpose of this project is to provide the selected disadvantage rural communities in depressed areas of the north and northeast with year round access to supplemental water supplies and food fish to rural inhabitants.

(c) Fishery Development in Large Impoundment Programme

This project is formulated for rehabilitating the environmental conditions in certain large impoundments namely Bung Boraped (200 km^2) in the Central Plains, Nong Han (90 km^2) in the northeast, and Kwan Phayao (20 km^2) in the north. The objective of this programme is not only to provide more water available for domestic supplies and irrigation purposes, but is also for providing good freshwater fishery resources, through stocking programme and sound management, for the rural inhabitants. Full scale of development programme could be implemented during the Fifth National Economic and Social Development Plan (1982-86).

(d) Aquaculture Development Project

It is a promotional programme for aquaculture development in the country by detting partially financial support (loan) from the Asian Development Bank. The objectives of the project are: to ensure increases in fish and shrimp production through aquaculture in order to meet the growing local demand; to improve income and employment opportunities of small fishfarmers; and to increase foreign exchange earnings from the exports. The project consists of six separate sub-projects namely: (i) upgrading of existing shrimp/fish ponds; (ii) brackishwater shrimp/fish pond estate settlement; (iii) brackishwater shrimp hatchery pilot project; (iv) freshwater prawn hatchery; (v) pangasius cage culture; (vi) integrated pond culture.

(e) Programme for Development of Pond Management Techniques and Disease Control

This project is implemented by the assistance of the United Nations Development Programme (UNDP). The project aims to develop appropriate management techniques and suitable methods to eliminate disease problems in aquaculture for better yield. At the end of the project, a practical manual will be prepared for the use of extension agents and fishfarmers on disease prevention and profilactic treatment.

(f) Technical Assistance for Applied Research on Coastal Aquaculture, Phase 1: Mollusc Culture

This project is receiving the assistance from the International Center for Living Aquatic Resources Management (ICLARM). The main objectives of the project are: to increase production of molluscs through aquaculture by identifying and providing technical know-how for hindering successful expansion of mollusc culture industry particularly mussels and cockle culture in the coastal zone; to initiate work on introduction and/or improvement of appropriate technologies for mollusc farming; and to formulate policies and/or regulations for the protection of mollusc resources and habitats.

(g) Aquaculture Demonstration for Small-Scale Fisheries Development (Phang Nga)

This project is assisted by the Bay of Bengal Programme (BOBP) for development in small-scale fisheries. The project site is in the Phang Nga Bay areas. The main objectives of the project are: to provide the basis for increasing incomes and improving living standards of the traditional fishermen; and to provide a model for expanded development efforts in the rural fishing sector. To achieve these long-range goals, the major components of this project extension will include:

- improvement and demonstration of the economic viability of finfish cage culture, mussel culture, and oyster culture;
- introduction of finfish pen culture with a view to establishing the feasibility and viability of this system;
- training and extension with special emphasis on the introduction of aquaculture management know-how at the village level;
- continuation of efforts in community development and women component activities;
- provision of basic facilities to improve living standards;
- assistance in the acquisition of loans and/or grants for aquaculture operations and basic facilities to improve living standards.

(h) Aquaculture Demonstration for Small-Scale Fisheries Development (Satul)

This project is similar to the Phang Nga Bay project, and is also getting support by BOBP. The project site is in the Ao Tanyong Po area, Satul Province. This area is populated by small-scale fishing communities, in which the livelihood of the villagers has been adversely affected by depleting fishery resources and to which development inputs are similar to those designed for the Phang Nga area.

(i) Improving Fish Utilization in Thailand

This project is funded by the FAO Technical Cooperation Programme (TCP). The aim of this project is to demonstrate the economic and technical feasibility of using some of the catches now not entering the market as human food. The project is now investigating the possibility of using "trash fish" and small pelagic fish supplies for the production of minced fish as raw material for fishball manufacture and the use of these fishes for various traditional dried, roasted and fermented fish products.

(j) Technical Assistance Project on National Coastal Aquaculture Institute (Songkhla Province)

This project had been tentatively organized and implemented with the Aid granted from the Government of Japan. The technical cooperation covers the objectives of: (a) to introduce the modern and appropriate technology for artificial breeding of economically coastal species; (b) to ensure adequate quality and quantity of fish and shrimp fry to supply fishfarmers; (c) to carry on certain research works in order to solve some coastal development problems; (d) to investigate potential coastal zone for aquaculture development; (e) to point out the suitable places for conserve and reserve areas in relation to its importance for coastal fisheries; and (f) to conduct fisheries training for students and interesting people. The goal of this project is to maximize production of aquafarm and coastal fisheries in the countries.

(k) Fish Genetics

This project is funded by the International Development Research Center (IDRC). The general objectives of the project are: to establish a permanent fish genetics unit in the Fisheries Department that include a core staff training, appropriate facilities and equipment, to initiate genetics research and stock improvement; and to extend the results including improved stock for application.

(l) Pilot Freshwater Fish Farm, Thailand

This project is funded by the Government of the Netherlands throught the Mekong Secretariat. The development objective is to increase the fish production in homestead and commercial ponds in northeastern Thailand. Attainment of this objective is expected to result in regional socio-economic improvements including increased employment opportunity and income, improved standard of living and nutrition particularly through increased supplies of protein food, as well as in the improvement of foreign exchange earnings. To achieve the goals, immediate objective has been set up to engineer, build, and initially operate a modern pilot fish hatchery and rearing facilities on a pilot farm of about 48 ha in Kalasin Province, northeastern Thailand.

(m) Development Project Ban Ao Makham Pom

This project is jointly funded by SCSP and the Canadian International Development Agency (CIDA). The project is designated primarily to increase income of small-scale fishermen in rural areas; provide alternative sources of income, and help them in obtaining some of the basic needs to improve their way of living. The immediate objectives are: strengthening the operational efficienty of fishermen's cooperatives; demonstrating the use of improved boats and fishing methods to increase productivity of small boat operators; testing improved methods of village level processing with the view toward increasing employment opportunities within the village; introducing and demonstrating appropriate fishfarming techniques; and providing some of the basic infrastructural facilities with as much local participation as possible.

4. MAIN REGULATORY MEASURES FOR MANAGING DOMESTIC FISHERIES

In Thai waters, fishing right is allowed only for the Thais. There is no entry requirement for fishing in public waters for the time being. Limitation is however applied to only certain areas such as sanctuary areas, spawning grounds and leased areas in which the right for catching and/or culture belongs to tenent. Fishing with certain type of fishing gears in freshwater fishery resources is annually prohibited from 16 May to 15 September. This period is the peak of the spawning season of most freshwater fishes. Catching of pla tu, *Rastrelliger necklectus*, is banned from 1 February to 31 March in the upper westcoast of the Gulf of Thailand which is the major nursing ground of this species.

Restriction of fishing methods has been established in the country for years. Fine mesh size net (seine) of less than 2 cm bar-size is prohibited in freshwater fishery resources. The use of trawlnet in freshwater and in inshore areas of distance less than 3 000 m from the tide zone is totally banned. Use of poisons and explosives is prohibited since they are likely to indiscriminately kill fish without regard to species and sizes, endangering the existence of fish stock, and often long-lasting damage to local ecosystem.

Lack of regulations controlling the number of fishing vessels allowed to operate in Thai waters causes over-fishing particularly for the demersal fishery resources. In response to this problem, the Fisheries Department has established a new licensing scheme for trawlers. In the first stage, it aims to freeze the number of trawl fishing vessels at the current level and to reduce it thereafter. In addition to this proposal, the Department has also recommended that the minimum mesh size for the cod-end should not be less than 4.5 cm bar-size. It is believed that these measures will ensure the biological maximum yield and achieve a positive net economic yield as well. However, it still waits for its proclamation.

5. FISHERY DEVELOPMENT AND MANAGEMENT POLICIES

As mentioned before, the fisheries of Thailand are generally small-scale and commercial. Most of the inland fisheries may be referred to as small-scale fisheries, which usually imply low productivity and low income. On the contrary, the marine fisheries are basically commercial rather than small-scale of artisanal oriented. Prior to the introduction of otter-board trawling in the early 1960s, the catches were mainly small pelagic species, caught inshore by several types of stationary fishing gears and simple purse seines. At early stage of marine fishery development, the Government of Thailand had given a high priority on the objective of increasing fish production. It resulted that capital intensive trawl fishery is more advanced than the traditional fishery. This imbalanced development has lead to the unequal distribution of wealth among the fisheries sub-sector concerned. It is even worse that the better of one sub-sector is on the economic expense of the other. Therefore, the Government of Thailand, at present, is placing high priority on improving socio-economic conditions in the traditional fishing communities.

Under the current National Economic and Social Development Plan (the Fifth Plan, 1982-1986), the Government has allocated a massive budget for rural development programme. Priority areas have been selected where concerted efforts are being made to upgrade small-scale fisheries.

The baseline information on the socio-economic condition of the fisheries in Thailand is very little known. Available data are often based on very limited samples or observations, and tend to be descriptive rather than rigorously analytic. It should be noted that a major constraint of fisheries development is the high cost of factors of production. The survey of cost and earnings of major marine fisheries, for example, shows that the percentage of fuel expenditure in the total cost is ranged 30-40% for trawl fishery and 10-20% for other fisheries (Rientrairut, 1979).

Furthermore, it reported that most of the small-scale fishermen get financial assistance from local middlemen and wholesalers, due to the lack of access to credit. This latter obliges them to sell their products to the same people. The price they receive is based on traditional prices which might sometimes be lower than what they could get from elsewhere. Therefore, their earnings may not cover costs of production which have been continuously increased and most of them earn their living at the subsistence level only. On the contrary, the commercial fisheries can survive in the fishing industry even though costs of production are even increasing as found in 1977 when monthly profit was significantly higher than that in 1974 due to the increase of average catch and price of the catch.

The current fish marketing facilities in Thailand are still less than satisfactory. The fishing ports lack basic facilities such as auction halls, ice-plants, fuel depots, cold storage and other essential services. Fish landing have already exceeded maximum capacity of the existing markets, thus more market facilities are needed to handle the catch. In addition, fish are usually transported by open trucks which are not well-fitted for perishable goods. It has been observed that the cost of fish per kilogram transported by open truck is higher than the one by refrigerated trucks because it includes the cost of ice needed to preserve the product (Reintrairat, 1979). In order to reduce marketing cost and preserve the products quality, the Government should find possible means to induce the change to refrigerated trucks. In addition, many authorized agents are also needed to cooperate seriously in order to successfully develop the fishery economics of the country.

As we may know, the golden days of the Thai marine fisheries has passed. The development period is now over and has been replaced by the management (Hongskul, 1981). Serious problems due to depleted resources in the Gulf of Thailand and the impact of the new law of the sea, particularly the extended jurisdiction of the exclusive economic zone by the neighbouring countries, are recognized in the new Fifth National Economic and Social Development Plan (1982-86). Emphasis therefore should be placed upon the management of the fishing fleets in various areas including extraterritorial waters, the development of coastal aquaculture as well as small-scale fisheries and the improvement of post-harvest technology for better utilization and for export.

Appropriate management must be designed to help overcome impending shortage and the effect on the fishing economy and livelihood of many people. The needed managements must be immediate if they are to be effective in preventing or ameliorating major economic, social and political problems.

In order to alleviate the problems in fisheries, the management scheme should include:

(a) To negotiate with some coastal neighbouring countries, i.e., Bangladesh, India, Indonesia, Malaysia, China, and Oman. The negotiation concluded several fishing agreements and joint-venture arrangements. Study for future possible arrangements with other neighbouring countries namely Burma, Kampuchea, and Vietnam should be initiated.

(b) To establish a new lincensing scheme to freeze the number of trawl fishing vessels to current level and to reduce it thereafter. This regulation will conserve the biological maximum sustainable yield and to achieve a positive net economic yield. However, this measure still waits for its proclamation.

(c) To improve the socio-economic standard of living for the small-scale fishermen by providing an alternative source of employment and supplementary income to rural fishing communities. The approach is including rehabilitation of coastal fishery resources by various possible means such as fish apartment construction; coastal aquaculture promotion, and other opportunity creation either in the field of fisheries, agriculture or industries, and the combination of these.

(d) To develop the fisheries for better utilization of underexploited pelagic fish resources for example tuna. A programme of pole and line fishing surveys had been implemented to demonstrate the livebait tuna fishing technique from small traditional fishing boats and to determine the possibility for its development. The survey indicated that the pole and line tuna fishing is very challenging due to sizeable resource of neritic tunas which have been found in Thai waters (particularly little and longtail tunas, but the frigate tuna and oceanic tuna were found in lesser amounts).

(e) To accelerate and strengthen the Village Fish Pond Development Programme particularly in the northeast and the north. This programme has even been launched for several years but it is in a small-scale due to limited budget and personnel. The Government has recognized the importance of this programme; therefore more budget has been allocated for establishing 375 village fish ponds during the Fifth National Economic and Social Development Plan (1982-86). This project attempts to increase fish yields that are made possible through the availability of water in a small impoundment. Appropriate techniques on fish culture, such as stocking, fertilization and harvesting of fish will be

demonstrated and taught to the villagers. Furthermore, the project is also attempted to educate villagers to understand the trade-offs between the use of impounded water for fish production and for domestic and agricultural purposes during the dry season, and to allocate water among the various uses of maximum benefit to the community.

(f) To strengthen research activities and staff in the field of coastal aquaculture and its fisheries. To serve these purposes, the National Coastal Aquaculture Institute has been established in Songkhla Province. This institution will be a centre of information, research, training, and coastal aquaculture services. The activities are planned for accelerating coastal aquaculture promotion and expansion in the country in order to maximize coastal fishery products for domestic consumption and increase foreign exchange earnings.

(g) To reduce wastage due to poor handling, preservation, and processing. Appropriate techniques for handling the catch at sea and during transportation are needed to urgently develop and improve the utilization of "trash fish" and small pelagic species for direct human consumption to ensure the best use of fish landings.

(h) To rehabilitate the environmental conditions in lakes and reservoirs. This programme would aim not only to provide more water available for domestic supplies and irrigation purposes, but also to provide good freshwater fishery resources, through stocking programme and sound management, for the rural inhabitants.

Furthermore, several national fisheries development programmes are being implemented according to the Fifth National Economic and Social Development Plan. These programmes fall into the scope of conservation of the fishery resources, management of the fisheries, development of fishing, aquaculture, processing and marketing. All these activities aim at maintaining and/or possibly increasing fishery production to provide enough cheap animal protein food for domestic consumption and exports for foreign currency earnings.

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APPENDIX/ANNEXE U

Fisheries Profile of Hong Kong

1. INTRODUCTION

The major Hong Kong fisheries comprise the following sectors: inland culture, coastal marine culture, and marine capture. Their relative importance, in terms of production, may be seen from Table 1. In 1981, total fisheries production was estimated at 182 300 t valued at US$ 243 million[1/] which contributed less than 1% to the gross domestic product.

Inland culture in 1 580 ha of fish ponds contributed 6 780 t to this total, valued at US$ 17 million. Another 260 ha were idle, pending development projects for housing, etc. It included polyculture, monoculture and tambak culture. The average yield rate was 4.3 t/ha/year.

The marine culture sector was dominated by the cage culture of marine fish; oyster meat production being negligible (see Table 2). The marine fish culture sub-sector comprised 1 780 units scattered throughout 50 sheltered coastal locations with a total raft area of 22.7 ha. These yielded 960 t valued at US$ 6.6 million, an average yield rate of 42.3 t/ha/year.

The capture fishery, conducted by 4 700 vessels employing about 28 000 fishermen, produced 174 500 t in 1981 valued at US$ 217 million. The landings comprised 84.7% of fish, 8.0% of crustaceans and 7.3% of molluscs by weight.

The trends in production for all sectors are shown in Table 2 for the six years from 1976 to 1981. Production in all sectors increased annually up to 1980. In 1981, production from the capture fishery and the inland culture sectors declined by 6.5% and 3.6% respectively as compared with 1980.

The continuous increase in production from marine fish culture has resulted from the continuing expansion of this sub-sector from 974 units occupying 7.6 ha in 1976 to 1 780 units in 1981. The expansion of this sub-sector may be directly related to the decline in size of the fishing fleet since 1976 (see Table 3). The major reduction in the number of vessels occurred post-1979 as a result of increased operating costs and the imposition of a ban on fishing in traditional inshore grounds by China.

Table 2 shows that the bulk of production (retained catch) from the capture fishery sector arose from the trawling sub-sector. Pair and sterntrawling were the most important methods and in 1981 their combined catch of just over 96 000 t formed 55% of the total production for the sector as a whole.

The increase in production from 1976 to 1980 was probably attributable to the increase in the number of pair and sterntrawlers from 505 in 1976 to 803 in 1979, an increase of 59%. The number of shrimp beam trawlers decreased slightly over the same period.

From 1976 to 1980 there were also major changes in the distribution of fishing activity (Table 4) which underwent a general decrease in Area III (Figure 1) and a major increase by sterntrawlers in the east China Sea. In 1976, 1.7% of the landings by pair and sterntrawlers came from the east China Sea while in 1980 the figure was 11.0%.

The decline in trawl production from 1980 to 1981 may reflect the reduction in the size of the pair and sterntrawler fleet from 803 vessels in 1979 to 703 in 1982, that is by 12.4%. This reduction in numbers probably results from higher operational costs (fuel cost, etc.).

The major resource exploited by the fleet is the mixed demersal fish stocks of the northern shelf of the south China Sea and to a lesser extent the east China Sea. The resource is exploited mainly by trawl, longline and gillnet.

1/ US$1 = HK$ 5.69

Table 1

1981 production, trade and supplies of fishery products in Hong Kong

Fishery	Local Production	Exports	Imports	Re-exports	Domestic supplies (% share)		
					from local production	from import	Total
Marine capture - 10^3 tonnes	174.5	60.0 a/	64.6	19.4	114.5 (54.7)	45.2 (21.6)	159.7 (76.3)
Marine culture	1.0	-	-	-	1.0 (0.5)	-	1.0 (0.5)
Inland culture	6.8	-	43.0	1.0	6.8 (3.2)	42.0 (20.0)	48.8 (23.2)
Total - 10^3 tonnes	182.3	60.0	107.6	20.4	122.3 (58.4)	87.2 (41.6)	209.5 (100.0)
All fisheries - US10^6	242.7	90.4	354.8	98.7	-	-	-
Total - food use							
10^3 tonnes	170.8 b/	59.8	98.7	18.7	111.0	80.0	191.0
US10^6	239.7	80.3	348.7	93.8	-	-	-

a/ Includes 36 300 t worth US$ 18 million landed direct from local vessels in China

b/ Excludes non food use, e.g., for fertilizer baits and fish feeds estimated at 11 500 t

US$1 = HK$ 5.69

Table 2

Hong Kong fishery production (t) by sector and method, 1967-81

Sector	1976	1977	1978	1979	1980	1981
Capture	151 050	153 440	155 940	182 480	186 750	174 560
Trawling	97 430	101 820	110 500	126 630	132 110	123 320
Pair trawling	not available	not available	not available	not available	61 340	56 180
Stern trawling	"	"	"	"	42 330	37 890
Shrimp trawling	"	"	"	"	28 440	27 250
Gill netting	17 410	19 070	19 950	23 450	22 490	21 270
Lining	12 540	12 740	11 430	14 630	13 320	12 990
Purse seining	16 950	11 380	6 280	8 040	7 820	5 310
Others a/	6 720	8 430	7 780	9 730	11 010	11 670
Marine culture	630	630	750	740	780	990
Fish	570	560	680	720	760	960
Oyster	60	70	70	20	20	30
Inland fish culture	5 240	4 210	5 810	6 560	7 030	6 780
Total	156 920	158 280	162 500	189 780	194 560	182 330

a/ Others include hang trawling, which comprises about 50% of the recorded production, trapping, dredging, etc.

Table 3

The composition of the Hong Kong fishing fleet, 1976-82
(No. of vessels)

	1976	1979	1982
Trawlers Pair	345	356	255
Stern	160	447	448
Shrimp	1365	1296	1027
Hang	64	75	69
Liners	1235	1174	923
Gill netters	1536	1220	1065
Purse seiners	385	298	263
Miscellaneous	384	562	709
Total	5474	5428	4759

Table 4

Percentage effort distribution by Hong Kong trawlers

	Area						
1976	I	II	III	IV	V	VI	ECS
Stern trawl	2.0	27.0	10.4	29.4	10.3	3.7	17.2
Modern pair trawl	9.8	13.0	13.9	52.3	11.0	0.0	0.0
Junk pair trawl	0.0	1.5	5.4	86.9	6.2	0.0	0.0
1980							
Stern trawl	5.7	9.0	2.3	7.3	2.8	9.0	63.9
Modern pair trawl	11.0	23.0	7.4	44.4	14.2	0.0	0.0
Junk pair trawl	0.0	78.6	0.0	21.4	0.0	0.0	0.0

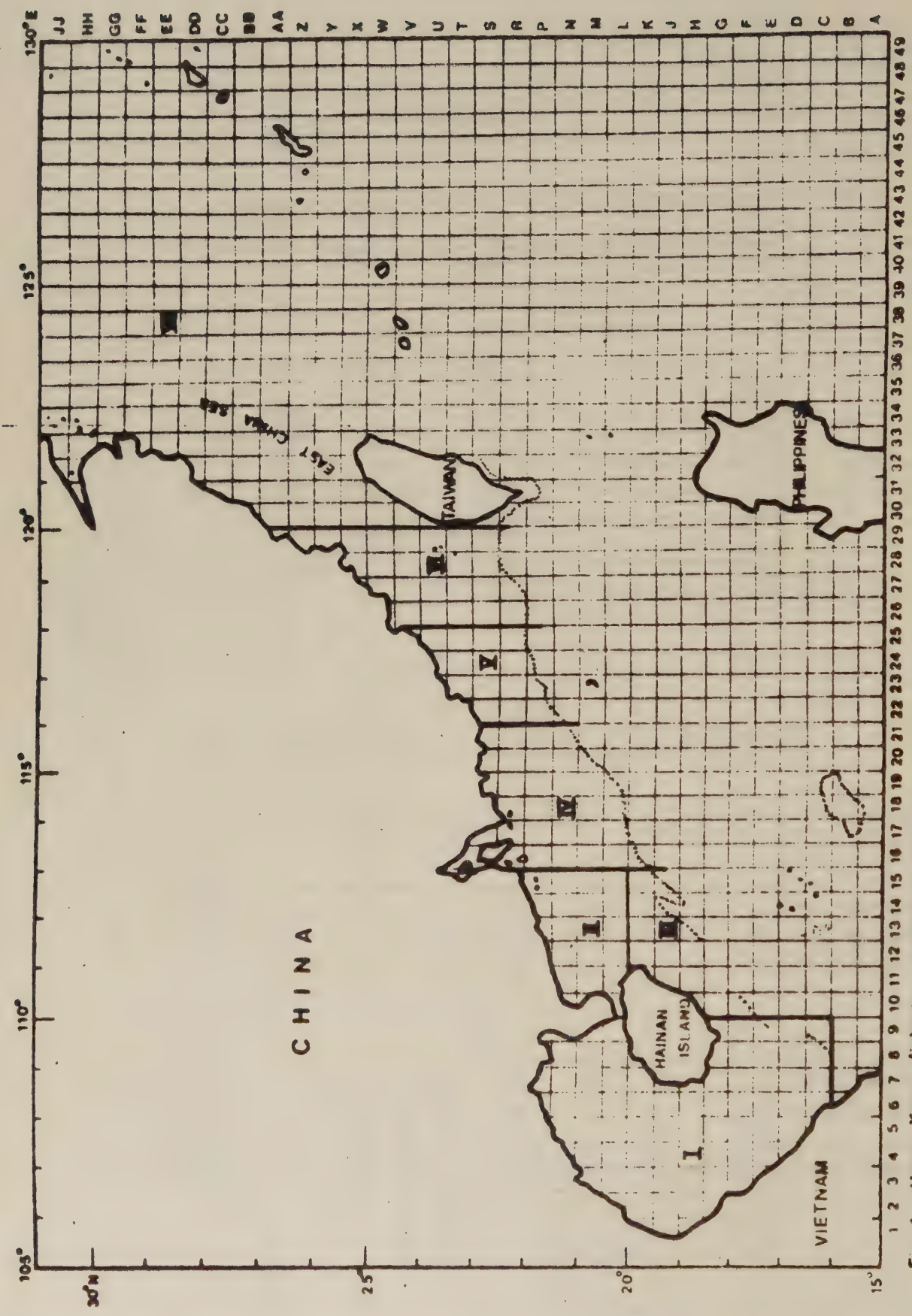

Fig. 1 Hong Kong fisheries statistical areas.

Figure 1

Hong Kong fisheries statistical areas

Exploitation of the mixed demersal resource is largely non-directed for species although certain degrees of selectivity do occur. For example sterntrawlers operate selectively in areas known to yield good catches of pomfret (*Stromateoides* and *Parastromateoides*) and yellow croaker (*Pseudosciaenea crocea*), while modern pair trawlers fish selectively for squid in late summer-autumn. Long liners select for species (e.g., golden thread, *Nemipterus virgatus*) by hook size and area.

The fisheries exploiting the mixed demersal resource also exploit stocks of species normally regarded as pelagic. These include scads (*Decapterus* spp.), Spanish mackerels (*Scomberomorus* spp.), hairtails (*Trichiurus* spp.) and sharks. These species together with squid, the other major pelagic species exploited, account for approximately 17% of the total local landings. They are the major components of the offshore pelagic resource and exploitation by the above methods is largely coincidental to the fisheries for demersal stocks.

Shrimp is the other major resource fished by the Hong Kong fleet and is exploited by some 1 000 vessels (1982) which fish in the inshore waters (less than 40 m) of the South China coast from Hainam to Swatow. In 1981 these vessels caught and estimated 13 000 t of shrimp, 10 000 t of fish and 4 000 t of other invertebrates.

A limited number of purse seiners and hang trawlers (a local form of mid-water trawl) exploit the pelagic resource in inshore waters, catching mainly scads, anchovies, sardines and gizzard shad (*Decapterus, Stolephorus, Sardinella, Clupanodon* and *Nematalosa* spp.).

There is considerable overlap in exploitation of the major resources by the trawlers, gillnetters and longliners. There are no clear divisions between inshore and offshore fisheries exploiting this resource, with the exception of beam trawlers and purse seiners, which are generally restricted to the inshore waters. Pair and sterntrawlers, however, concentrate most of their fishing effort in waters of greater than 40 m depth. Consequently the greater part of the trawl landings, approximately 84%, is from the offshore waters.

Utilization and consumption. Of the total fisheries production in 1981 (see Table 1) about 60 000 t of marine products (33%) were either exported or landed outside Hong Kong, 11 500 t (6%) were for industrial use and the balance of approximately 111 000 t (61%) was for local domestic consumption. In addition, Hong Kong imported a total of 107 600 t of fishery products of which some 80 000 t were retained for local consumption. This makes the total fishery products consumed in Hong Kong at about 191 000 t or 37.0 kg per head of population. About 65% was sold chilled or frozen, 25% live, 8% cured and 2% canned or prepared.

Market demand and potential. The major domestic demand is for fresh, chilled fish. Live fish and salted-dried fish, however, command a good price and owing to the low supply of some species, are now becoming a luxury item. In addition, the demands are also high for other salted, dried fishery products, particularly shark's fins, beche-de-mer, scallops and oyster amongst the Chinese population.

Apart from the domestic demand for fresh chilled marine fish (estimated at 124 000 t) of which about 90% is supplied by the local fleet, Hong Kong relies on imports for most of the remaining fishery products consumed. With the apparent limitation of the traditional resources exploited by the local fleet and despite the average annual increase of 7% in imports between 1977 and 1981 there is still an anticipated supply shortfall due to the growth of both population and income.

The fishing community traditionally lived aboard its fishing vessels. A major impact of the modernization of the fleet has been to shift this floating community to accommodation ashore, centred around the major fishing ports. This trend has been accelerated by the inducements provided by the higher wages and better living and working conditions to be found ashore, leading to a decline in the number of fishermen available to crew fishing vessels. Due to the scarcity of land and accommodation, such workers continue to live in the fishing ports and thus retain their links with the fishing community.

2. THE MAJOR ISSUES ENCOUNTERED

The stocks exploited by Hong Kong fishing fleet are shared with other nations, principally the People's Republic of China.

The resources available to the Hong Kong fishing fleet are mainly those currently exploited on the northern shelf of the South China Sea and in the East China Sea. There is also a growing body of evidence that the major resource currently exploited is becoming overexploited. Figure 2 shows not only the approximately parallel relationship existing between the trawl catch and the total catch for the entire fleet but also a decline of about 40% in the trawl catch per unit effort between 1975 and 1980. Thus, the reduction in total catch from 1980 to 1981 may result not only from a decrease in the size of the fleet (Table 3), but also from a decline in the abundance of the resource.

Recent developments to control coastal fisheries are also restricting resource availability. A ban on trawling within the 40 m depth contour off the South China coast appears to be affecting the distribution of fishing effort. Shrimp trawlers expend almost all of their effort within the 40 m contour and because the resource they exploit is restricted to this area a complete ban will make this resource effectively unavailable.

The declaration of a 200 mile Exclusive Economic Zone (EEZ) by Vietnam in 1977 has drastically reduced the traditional fishing ground for shrimp trawlers in the Gulf of Tong King. The declaration of 200 mile EEZ's by other neighbouring countries could also reduce the grounds and thus the resources available to the Hong Kong fleet.

Hong Kong's marine capture fishery is closely linked with that of the People's Republic of China. Many Hong Kong fishing vessels are licensed in both Hong Kong and China. However, catch and effort data and information on the pattern of exploitation of the grounds on the northern shelf of the South China Sea are not complete. This presents problems for the determination of management measures which are exacerbated by the variety of fishing methods employed to exploit the resource. These methods are difficult to compare for any attempt to estimate some measure of the total unit effort exerted by the overall fishery.

Other major issues encountered are internal but probably common to those of other countries. These include increased operating costs as a result of the rise in fuel costs; increased interest rates; higher wage rates to attract skilled crews; and increased maintenance and repair costs.

As interest rates rose commercial investment in new fishing vessels reduce considerably, resulting in fewer new vessels of smaller average size entering the fishery. Further, the construction costs of wooden vessels rose at a faster rate than general inflation, and for the largest vessels wood appears to be losing its traditional attraction as a cheap, reliable medium of construction. Higher labour and operation costs in the vessel boatyards, the lure of greater financial returns offered by the pleasure craft business and the increasing shortage of sea frontage for boatyards due to development have rendered fishing vessel construction a relatively unattractive business. Lack of experienced craftsman is also a pressing problem.

Although marketing locally is not a problem at present, due to the provision of seven wholesale fish markets strategically sited throughout the territory for the convenience of buyers and the fishing fleet, problems may arise in the future if the exploited resources change as a result of markedly decreased catches and falling landings of traditional supplies. The existing fleet of trawlers could readily convert from demersal trawling to mid-water trawling with consequential changes in the types of landings made and, therefore, the facilities and methods required for marketing and/or processing. It remains to be proven, however, that in the northern South China Sea stocks of pelagic fins, which are possibly underexploited or unexploited, would be capable of sustaining a long term, commercially viable fishery. Little is known of their composition, abundance, migration patterns or other biological parameters.

Consumer selectivity for fresh/chilled or live, predominantly demersal fish is an issue which has to be faced in Hong Kong with its relatively affluent population will

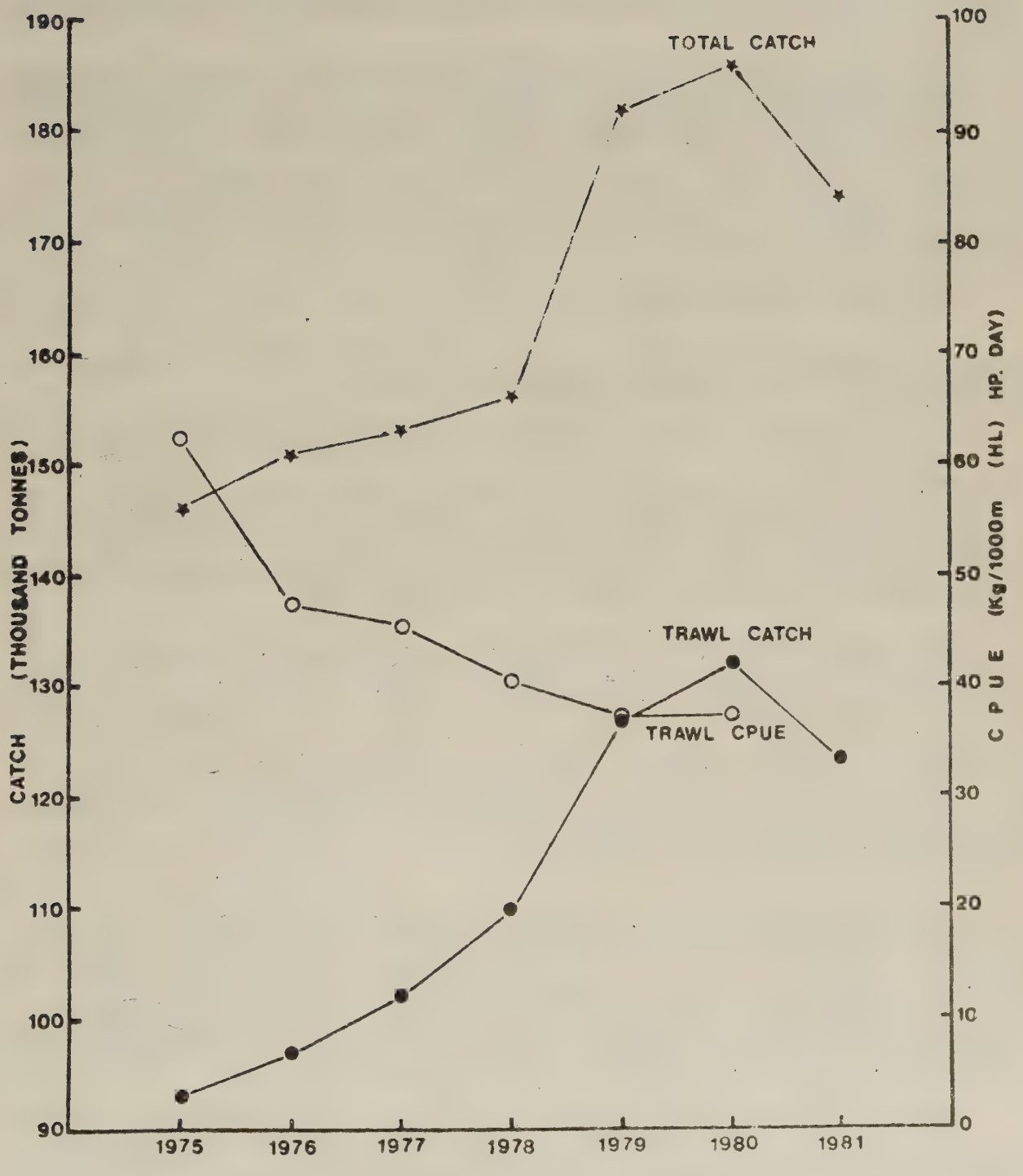

Figure 2

Catch and catch per unit effort for the trawl fishery and the total catch by all methods

able to indulge its traditional food preferences. Considerable resistance to the introduction of new, unfamiliar pelagic or demersal species is to be expected initially at the retail market level. Past experience has shown that unfamiliar demersal species are acceptable at wholesale markets, and therefore, must reach the consumer in one form or another. In relation, however, to the marketing of pelagic species it does open the question of substitution via export/imports of marine products but this requires careful cost benefit study.

The existing exploited resources are almost entirely outside Hong Kong's jurisdiction and consequently regulatory measures are few. Within local waters they include restrictions on fishing in harbour and navigation channel waters. The use of dynamite and poisons is an offence anywhere in Hong Kong waters, but there are no mesh-size regulations, and many juveniles are caught for culture purpose. The imposition of the ban on trawling in inshore waters by China may enhance the prospects for other demersal fisheries in the long term. In the short term, however, it increases the effort exerted in Hong Kong waters which supply the culture fishery.

3. CURRENT DEVELOPMENT PROGRAMMES

In view of the foregoing sections, fisheries development planning is aimed at ensuring an adequate supply of fisheries products for local consumption by increasing the productivity of all sectors where economically justified.

Basically, management aims at the rational utilization of the resource. The major resource on which Hong Kong is dependent is the mixed demersal fish stocks of the northern South China Sea. Long term planning is necessary to achieve the above objectives. Because production is ultimately dependent on the state and size of the resource, a primary aim must be to establish the state of the existing resources. These may be subdivided into: (a) those that are currently exploited, predominantly the mixed demersal stocks of the northern South China Sea; (b) stocks in the same region which by virtue of their location or habit may be underexploited or unexploited.

Action is needed urgently on both of the above. Regarding (a), the strategy is to broaden and refine the data base from which such assessment is made by increasing the coverage of the various capture fishery sub-sectors. Currently, data on catch composition for catch and effort studies are obtained from the records of the Fish Marketing Organization (FMO) for pair and sterntrawlers. Recently, shrimp trawler landings have been included. An equally important fishery is that conducted by gillnetters and in the near future this too will be studied. Continuous monitoring of these major fisheries will provide data from which a more fully integrated index of abundance for the exploited stocks may be obtained. It will also shed some light on the degree of exploitation of pelagic stocks by the demersal fishery.

Regarding (b), the unexploited or underexploited stocks, these fall into two categories, demersal stocks to be found on the continental slope and pelagic which may have a geographical range extending beyond the edge of the continental shelf. The strategy will be to deploy the new 39.3 m Fisheries Research Vessel TAI SHUN on an exploratory programme to locate and quantify such stocks, using quantitative acoustics and suitable fishing gear. Initially, the programme will concentrate on offshore pelagic stocks assessment of the South China Sea north of the 15° parallel and test marketing of the major catch will form an important part of the programme.

Should the exploratory work demonstrate that there are stocks capable of sustaining an economically viable commercial fishery, the development of gear suitable for use by the existing fleet will need to follow-on very quickly by adapting and modifying gear from elsewhere to suit local conditions. This could take the form of pelagic trawls, midwater or off-bottom longlines and gillnets or the introduction of the purse seine.

Earlier studies using FRV CAPE ST.MARY revealed that there is a large unexploited resource, including seasonally abundant shrimp, at the edge of the continental shelf. This work needs to be followed up and a further assessment conducted with a continuation of the test marketing of unfamiliar species.

The provision of adequate supplies of fisheries products is dependent not only on the resource but also on the fleet which is in a continuous state of development and change. The overall trend has been for an increase in mechanization and a reduction in the overall size of the fleet, accompanied until recently by an increase in the size and horse power of individual vessels. Encouragement is provided through low interest loans from the loan funds administered by the Agriculture and Fisheries Department and technical backup services.

A fuel conservation programme seeks in the short term to improve the operational efficiency of existing vessels and in the long term the encouragement of fuel economy in the design of new vessels. Leaflets stressing these principles are issued. Fuel additives and devices for improving the economy of diesel engines are under test.

Vessels being built with Government finance incorporate fuel efficient measures. Two new 26 m wooden trawlers under construction and financed by the Fisheries Development Loan Fund are the first to be fitted with a two-pitch (partially-variable) propeller driven by single propulsion engines. Each of a further pair under planning include in their designs a propeller nozzle to achieve greater thrust from the same propulsion engine. Technical advice disseminated through loan schemes stresses fuel economy.

A number of activities in the development programme seek to improve general operating efficiency. These include gear technology investigations, primarily for trawling; hull design and propulsion system improvement; a fisherman's radio net work, dissemination of information on navigational electronics, etc.

Recent tests of locally used trawls conducted in a flume tank in Europe have pointed to certain inadequacies and suggested means for improvement. Refinement in the design of 26 m wooden pair trawlers has continued; 19 have been built to these departmental designs, a basis emulated in traditional boatyards that use no plans during the construction of their vessels. To meet demands for greater power and fishing efficiency, a slightly larger design is under consideration.

Local fishing vessels are now being fitted with long range ship-to-shore radio communication. The majority of larger vessels are now fitted with radar, and other navigational aids such as Loran and Satellite-Navigation systems have been installed or are under consideration.

Long-term objectives include the improvement of catching efficiency and handling and preservation at sea, and the consideration of alternative boat-building materials.

Vessels involved mainly in the inshore fishery are when feasible encouraged to convert to fishing methods that can be effective outside the restricted zones. About 100 vessels have been converted.

Ancillary industries such as fishing vessels boatyards and engineering workshops are given a measure of priority in the allocation of very scarce water-front land.

Annual costs and earnings surveys of the different capture fishery sub-sectors are conducted to provide information on their economic viability and to indicate the sub-sectors that should be developed through the loan schemes. In practice the general policy appears to be working well as evidenced by the trawler sector where the trend has been for a reduction in size of the less profitable shrimp trawler fleet and the steady state of the more profitable sterntrawler fleet. Despite the higher profit, long lining has declined considerably mainly due to a shortage of skilled crewmen.

Government also provides vocational training for fishermen to cope with the continuous evolution of the fleet. Such training covers navigation, engineering, business management, radio-telephony,etc., and will be expanded particularly if new resources are to be exploited by new methods to Hong Kong.

Training at tertiary level has been catered for by the provision of funds for scholarships, grants and loans through the establishment of a Marine Fish Scholarship Fund, financed by the FMO in the sum of US$ 176 000. The objects of the Fund are twofold:

firstly the education and training of people employed in the Hong Kong marine fisheries and marketing industries and their families and dependents; and secondly, for people wishing to enter the industries. For the academic year 1981-82 one award was made to an applicant in the first category and five, in the second; additionally, four awards were renewed. Use of the Fund will assist in the upgrading of the level of educational attainment of people in the industry.

4. MAIN REGULATORY MEASURES TAKEN OR CONSIDERED FOR MANAGING DOMESTIC FISHERIES

Within local waters, the growing marine fishery is the cage culture of groupers, snappers and breams, etc. A marine Fish Culture Ordinance received the Royal Assent in 1980 specifically for the control and orderly development of this fishery which will be conducted only under licence in specified sites in gazetted fish culture zones. The fishery is susceptible to the effects of population, oil spills and the eutrophication of inland waters from industrial, agricultural and domestic effluents which favour the development of red tides. Under the ordinance it is an offence to deposit any substance which will injure cultured fish or pollute the waters of any fish culture zone. Other legislation not directed at fisheries but rather at achieving the control of water quality will benefit domestic fisheries as a whole.

Marketing of marine fish is controlled by the enforcement of the Marine Fish (Marketing) Ordinance which provides for their landing, movement, sale and export. No further measures are envisaged at present for the regulation of domestic fisheries.

5. ECONOMIC INFORMATION FOR FISHERIES DEVELOPMENT PLANNING

By virtue of the Marine Fish (Marketing) Ordinance, fresh/chilled fish may only be bought and sold wholesale at a FMO market, and are fairly well documented. The smaller vessels, such as handliners, some gillnetters and longliners retail directly particularly in some of the more remote locations supporting well developed communities. Purse seiners may also dispose of their catches directly to fish culturists for use as feeds. There is little information available for these small-scale fisheries or for the well developed shrimp fishery, the trawlers of which are not obliged to sell their catches or shrimp or other invertebrates through FMO. Landings of live fish are also not required to pass throught FMO, which in any case, is not equipped to deal with such fish. There are thus some serious information gaps relating to local landings which are partially overcome by periodic surveys.

It appears that there is little conflict between the small-scale and large-scale fishery sectors, exemplified by the stern and pair trawlers, either with respect to the resources exploited or to competion for custom. Close liaison is maintained with the fishermen selling their catches through FMO and a great deal of information is obtained during the processing of loan applications. This does however need to be correlated with the results from the periodic surveys. The size of the fishing fleet is known from a census conducted every three years at Chinese New Year when the fleet is in port. Annual costs and earnings studies of the different sub-sectors of the fleet are prepared annually.

The current trawler catch and effort programme which has been operating since 1973 provides indices of the seasonal and annual abundance of the major taxa for the monitoring of the level of exploitation.

The establishment of INFOFISH has been very stimulating in monitoring the international fish trade and may have opened up new opportunities for trade which hitherto were not known to have existed. It would be desirable to obtain further information on consumer taste trends and consumption patterns which have undoubtedly changed within the last few years as supermarket chains have become established and convenience foods have become available.

6. REQUIREMENTS FOR FISHERIES RESEARCH

The *per caput* consumption of fish in Hong Kong is one of the highest in the world (37 kg)1/ and demand has remained high despite a rapid escalation of price in recent years.

1/ Net weight (i.e., processed)

It is also forecast that demand will grow due to the growing population and its increasing affluence. Until recently production by the local fishing fleet has been equivalent to approximately 95% of the local consumption. However, in a situation of increasing demand, falling catch per unit effort (overexploitation) and increasing operational costs, it is probable that the proportion of local consumption met by local production will decline and Hong Kong could become an importer of fishery products.

The major need for fishery research in Hong Kong is to enable the local production to meet as far as possible local consumption. The current research programme is thus aimed at expanding the resource base available to the local fisheries by investigation of potential additional or underutilized resources. In particular the offshore pelagic resources of the northern shelf of the South China Sea. Another potential resource requiring further research are the deep water demersal stocks along the edge of the continental shelf.

In addition there is a continuing need for research into the level of exploitation and pattern of exploitation of the resources currently fished in order to improve the background data upon which development programmes are based. Currently this need is met by the trawler catch and effort programme and surveys of the various fishery sectors. A further requirement, which is not currently covered, is for independent assessment of the abundance of fish stocks in the areas fished by means of non-commercial surveys.

APPENDIX/ANNEXE V

Fisheries Profile of the United States, 1981

1. US LANDINGS

Commercial landings (edible and industrial) by US fishermen at ports in the 50 States were 6.0 billion pounds valued at US$ 2.4 billion in 1981, down 8% in quantity but up 7% in value compared with 1980. These were the lowest US landings since 1977 (5.2 billion pounds). In 1981, increased landings of anchovies, clams, cods, Pacific mackerel, rockfishes, salmon, and squid were offset with declines in other major species such as crabs, flounders, menhaden, Atlantic sea herring, and tuna. Prices in 1981 of most edible fish and shellfish increased slightly. The average exvessel price per pound was 40 cents in 1981 compared with 35 cents in 1980.

Commercial catches by US fishermen at ports outside the 50 States or transferred in the US fishery conservation zone (FCZ) onto foreign vessels (joint ventures) were an additional 473.5 million pounds valued at US$ 129.8 million. This was an increase of 85% in quantity and 27% in value when compared with 1980. Most of these landings consisted of tuna landed at canneries in Puerto Rico and groundfish transferred to foreign vessels.

Edible fish and shellfish landings in the 50 States were 3.5 billion pounds in 1981, down 3% compared with 1980. Landings of salmon increased, but there were declines in crab, flounder, and tuna landings. In 1981, domestic production was 53% and imports 47% of the total US supply.

Landings for reduction and other industrial purposes by US fishermen in 50 States were 2.4 billion pounds in 1981, 14% less than 1980. The decrease is attributed to small catches of menhaden, the dominant industrial fish, for the second year in a row.

2. FOREIGN CATCH IN US FCZ

The foreign catch of fish (excluding tunas) and shellfish in the US fishery conservation zone (FCZ) was 1.7 million tons (3.6 billion pounds) in 1981, 2% higher than in 1980 and 10% below the average for the five preceding years. As in other years, the FCZ off Alaska supplied by far the largest share of the foreign catch (91%), followed by the North Atlantic (5%); Washington, Oregon, and California (4%); and Hawaii and the Pacific islands (less than one tenth of one percent).

Alaska pollock comprised 68% of the foreign catch, Pacific flounders were 6%, Pacific cod and hake (whiting) 4%, and other fish and shellfish the reminder.

Japan continued as the leading nation fishing in the US FCZ with a catch of 1.2 million tons or 70% of the total foreign catch in 1981. Catches by vessels of the Republic of Korea, the second most important catching nation, were 243 000 t, 16% above 1980.

3. US VS FOREIGN CATCH IN US FCZ

The combined catch by US and foreign vessels in the FCZ was 2.7 million tons in 1981, up 7% compared with 1980. The US share rose to 39% of the total, up from 36% in 1980.

4. MARINE RECREATIONAL CATCH

The data shown in the publication are for the Atlantic coast and Gulf of Mexico coast for 1979 and are part of a recently initiated survey of marine recreational fisheries in the United States. Survey results for other areas were not available in time to be included in the publication, but will be published in the next few months. Fisheries of the United States, 1982, will contain data on the total US marine recreational catch.

5. WORLD LANDINGS

In 1980, the most recent year for which data are available, world commercial fishery landings were a record 72.2 million tons, one percent more than the revised 1979 total of 71.3 million tons. Japan continues to be the leading nation with 14% of the total: the USSR, second with 13%; China, third with 6%; United States, fourth with 5%, and Chile, fifth with 4%.

6. PRICES

During 1981, the Index of Exvessel Prices for Fish and Shellfish increased to 431.0. The index (1967 = 100) for edible fish was 439.9, up 8% from 1980. Among the few exceptions to this upward trend were the exvessel prices for Pacific halibut, salmon, and whiting which declined slightly. The index for industrial fish was 314.1 for 1981, down less than 1% compared with 1980. The edible shellfish index increased from 376.4 in 1980 to 427.7.

7. PROCESSED PRODUCTS

The 1981 value of domestic production of edible and non edible processed fishery products was US$ 4.9 billion, US$ 451.3 million above 1980. The value of edible products increased to US$ 4.5 billion, 11% above 1980. All categories of edible products increased in value except fish portions which declined US$ 25.2 million. The value of industrial products of US$ 433.7 million in 1981 was US$ 16.0 million more than 1980.

8. FOREIGN TRADE

Total import value of edible and non edible fishery products was a record US$ 4.2 billion in 1981, an increase of 14% compared with 1980. US imports of edible fishery products were 2.3 billion pounds (product weight) valued at a record US$ 3.0 billion in 1981, up 6% in quantity and 13% in value. US imports of non edible (industrial) products were valued at US$ 1.1 billion in 1981, up 18% compared with 1980.

Total export value of edible and non edible fishery products of domestic origin was a record US$ 1.2 billion in 1981, an increase of 15% over 1980. The United States exported a record 669.3 million pounds of edible fishery products valued at US$ 1.1 billion in 1981, up 17% in quantity and 19% in value from 1980. Exports in 1981 of nonedible products were valued at US$ 84.2 million, 17% less than the non edible products exported one year ago.

9. SUPPLY

The US supply of edible fishery products (domestic landings plus imports, round weight equivalent) was 8.3 billion pounds in 1981, 3% more than 1980. The change includes an 8% increase in imports of edible fishery products and a 3% decrease in domestic landings. The supply of industrial fishery products was 3.1 billion pounds in 1981, 8% less than 1980. A decrease in domestic landings of industrial products contributed to this decline.

10. *PER CAPUT* CONSUMPTION

Us consumption of fishery products was 13.0 pounds of edible meat per person in 1981, up 0.2 pound from 1980.

11. OTHER IMPORTANT FACTS

Menhaden landings in 1981 of 2.1 billion pounds (955 000 t) made up 35% of the commercial fishery landings in the United States.

Salmon was the second most important in quantity and value.

Carabs were the third most important in quantity and value

Shrimp was the the fourth most important in quantity and first in value.

Tuna was the fifth most important in quantity, but fourth in value.

Scallops were fifth in value.

Tuna landings by US craft at ports outside the United States amounted to 148.7 million pounds, mostly landed at Puerto Rican ports. Other species landed at ports outside the United States were shrimps, at central and south American ports, and Pacific groundfish and squid onto foreign vessels in the US FCZ.

Cameron, Louisiana, was the leading US port in quantity of commercial fishery landings. The second was Los Angeles area, California, followed by Empire-Venice, Louisiana; Pascagoula-Moss Point, Mississippi ; and Dulac-Chauvin, Louisiana. Menhaden was the principal species landed at these ports, except at the Los Angeles area, where tuna was the principal species.

Kodiak, Alaska, was the leading US port in terms of value, followed by the Los Angeles area and San Diego, California; New Bedford, Massachusetts; and Dutch Harbour, Unalaska, Alaska.

Louisiana led all States in volume of landings with 1.2 billion pounds, followed by Alaska with 975.2 million pounds; California with 775.2 million; Virginia with 487.9 million; and North Carolina with 432.0 million pounds.

Alaska led all States in value with US$ 639.8 million, followed by California with US$ 275.2 million; Massachusetts with US$ 196.9 million; Louisiana with US$ 193.5 million; and Texas with US$ 174.8 million.

Joint venture catches in 1981 of 307.8 million pounds valued at US$ 21.0 million were caught by US fishermen and unloaded onto foreign vessels in the US FCZ. This represents a substantial increase over 1980, when 137.7 million pounds were caught valued at US$ 8.4 million. The major species caught were Alaska pollock, Pacific hake (whiting), and Pacific flounder.

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